Journal of Knowledge Management and Information Technology

Volume No. 13

Issue No. 3

September - December 2025

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Journal of Knowledge Management and Information Technology

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(Volume No. 13, Issue No. 3, September - December 2025)

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The Importance of E-Leadership in Meeting Digital Challenges

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A B S T R A C T

As organizations deal with advances in information and communication technologies, efforts to accommodate work-life balance and flex scheduling, they are using virtual work to break down boundaries and connect employees—regardless of geographical location or subunit affiliation. In addition, researchers from a number of academic disciplines are attempting to investigate how these changes are affecting organizations.
In this environment, time and space have different meanings. Under more traditional work arrangements, employees were co-located; today, coworkers may be collaborating or coordinating activities from geographically diverse locations. Because leaders may no longer have the luxury of bringing people together physically as an aid to keeping them focused on the right job, they often have to rely on the emotional connections that result from bringing people together around organizational mission and vision. As a result, behavior becomes more discretionary and cohesion around mission and vision enables all employees to step up to leadership roles—leading both themselves and others.
Today, more and more companies are emptying their cubicles and opting for a virtual workforce. For many organizations the cost-cutting nature of virtual collaboration, which allows companies to save money on office leases or other real estate costs and decreases the need for business travel, is simply too hard to resist at a time when budget cutting is priority one.

1. Introduction

Virtual teams are a relatively new phenomenon, and are defined as "groups of geographically and organizationally dispersed coworkers that are assembled using a combination of telecommunications and information technologies to accomplish an organizational task". Virtual teams communicate and work synchronously or asynchronously through such technologies as telephones, electronic mail, bulletin boards, audio/video/data conferencing, automated work flow,electronic voting, and collaborative writing. Face-to-face communication may also be an important factor.

Virtual teams play an increasingly important role in organizational life and offer organizations the flexibility to remain competitive. Virtual teams are projected to form the nuclei of twenty-first- century organizations. However, the use of virtual teams has outpaced our understanding of their dynamics and unique characteristics. Leadership is one of the most fundamental of these virtual team dynamics.

There has been long and extensive research on leadership in collocated teams and groups. Typically, leadership can be viewed in a number of ways; for example, as a structured authoritative role, or as the

ability of individuals to intrinsically or extrinsically motivate followers. One of the key skills in concept of leadership is that of relational management, which refers to the ability of leaders to develop interpersonal relations that foster a workable balance of cohesion, unity, and task motivation in the group.

Leadership in the group support systems process is an important variable influencing the effectiveness of small group decision-making. Other studies also suggest the critical role leadership plays in groups working via ICT. In virtual teams, leaders are often the nexus of the team, facilitating communications, establishing team processes, and taking responsibility for task completion. Technology becomes the crucial and ever-present link between virtual team members, one that team leaders must manage skillfully. Although recent research has begun to look at leadership issues in virtual teams, but clearly, to some extent, the role of virtual team leaders necessitates a different level of skills than those of traditional collocated team leaders. Leaders can no longer control the work processes of virtual teams with traditional means, and need to develop a different set of coordination and control mechanisms. Virtual team leaders must be able to "read" all the personal and contextual nuances in a world of electronic communications. They must be able to understand the possible causes of silence, misunderstandings, and slights, without any of the usual signs to guide them. Leaders must be sensitive to the "flow" of team processes, paying attention to the smallest matters to head off potential troubles that could derail the team's task. Virtual team leaders, therefore, must not only manage the project tasks and occasional personality conflicts normally associated with a collocated team, but must also be able to guide a team of geographically distributed, and often organizationally and culturally different individuals, in creating a common purpose. They may also be the person interfacing with stakeholders and extended team members, such as direct and indirect managers, customers, and suppliers.

Whereas the global, organizational, and technological pieces are in place for a revolutionary change in the way people work together, it is imperative that virtual team members and leaders have the cognitive models they need to operate effectively in this new environment. The importance of relationship building in a virtual environment and methods to build relationships are significant factors when practitioners engage in virtual work.

2. E-Leadership

Virtual teams are increasingly becoming the life-blood of most companies: they tend to undertake the most global, strategic and complex projects. They have the strong advantage of gathering the best

people for a specific task independent of their geographical location in a sort of 'Just in time talent' approach.

There are practical reasons for this development. Given the ongoing, relentless globalization of organizational life with a growing emphasis on India, China and Latin America, an increasing number of employees tend to spend an increasing amount of time working virtually. Furthermore,multinationals are becoming wary of the costs of having their employees travelling around the world for a meeting lasting just a few hours. We also observe that an increasing number of professionals are developing a strong sense for sustainability, both in terms of protection of the environment and carbon footprint reduction, as well as maintaining a healthy 'Work-life balance'. Knowing how to develop and maintain high performing virtual teams has therefore become a critical competitive advantage. Virtual leadership is a new term for a new situation. Companies that perpetuate the myth, that virtual teaming are business as usual, just on a distributed scale, often encounter serious challenges in team communication and conflict resolution. On the other hand, company's conscious of developing and maintaining a high quality of trusting relationships are better prepared to successfully develop common purposes, operating principles, goals, roles, expectations, and milestones. It is the human interpersonal relationship ingredient, often called emotional intelligence (EI), which unites highly qualified people in different locations.

Virtual leaders conscious of EI do the following:

- Create--and communicate--the big picture.
- Establish best practices.
- Re-engineer work processes.
- Establish clear communication channels.
- Be a role model.
- Fine-tune your ability to understand multiple perspectives.
- Be skilled at leading in a cross-cultural environment.
- Create effective email protocols.
- Interface successfully with organization executives.

3. Current Scenario of E-Leadership

The last decade has seen an impressive amount of literature about virtual teams.
The focus has been changing over the years. After a strong preoccupation with technology and processes (the thinking was mainly that if you got the right technology and the right processes in place, the team

would automatically perform). There followed the realization that there was something else to learn in order to develop high performing virtual teams: the aspects of team work and management in virtual teams got more and more into the focus.

However, developing, and leading effective virtual teams still remains a big challenge. Less than 30% of virtual teams are seen to be effective and successful. Furthermore, there is often frustration around virtual working: people consider it to be only a necessary (but often poor) substitute for face-to-face meetings. Intrigued by the current situation – characterized by this paradox of increasing virtual working on the one hand and unresolved difficulties and growing challenges on the other the question arises. Why is virtual working still representing such a challenge?

It has been found out that the crucial differentiate between mediocre and high performing virtual teams is the development of virtual leaders who are able to develop and lead virtual teams. Effective management of virtual teams is necessary but not sufficient: there is a real need for virtual leadership. Geographical distance needs not be a distracter but can become an enabler.

Virtual working can lead to very rich results and high performing virtual teams can be developed, provided that the right leadership is in place, with the right skills and competences in the team.

4. Challenges for Leaders of Virtual Teams

Recognizing the need for support often leaders and managers just 'end-up' leading and managing virtual teams without having necessarily learnt to do so. They often don't realize that developing high performing virtual teams requires some different leadership and management skills. Often they actually don't dare admitting/expressing that they need help:

Also only a minority of organizations have realized that virtual working needs specific support and endorsement. At this stage it seems that only a few organizations have explicitly assessed the value of virtual working and developed a strategy for it, or have a programme to attend to the technological, social and psychological needs of their employees.

Some strategies for effective E-Leadership are:-

- Keeping the technology simple
- Establishing trust and intimacy
- Establishing a new etiquette
- Recognizing that each individual is unique

- Recognizing and managing tensions and dilemmas
- Role versatility
- Self-awareness
- Leading in the moment
- Managing the virtual process

5. E-Leadership –A Concept for Saving Time and Money

The number one reason that professionals want to participate in virtual teams more frequently is simple: increased productivity. As the size of the virtual workforce is growing, so is the likely impact on productivity and profitability for organizations. Everyone believes that virtual leadership helps in saving time and money.

Almost everyone who has worked on virtual teams said they liked the experience. Most would like to participate in virtual work (or do so more frequently). The majority of those who want to work on virtual teams report that they anticipate it will become a part of their job in the next five years.

How It All Gets Done

Of all the communications tools relied upon in a virtual project team, email and audio conferencing are the leaders. Other commonly used tools include fax, cellular, intranet or extranet, online calendar or scheduling tools, paging, Web conferencing and videoconferencing, among others.

Looks Aren't Everything

Most of the employees have never met the entire virtual team face-to-face. So how does it affect the communication when working with groups they have never seen? Most of the employees feel that being a part of a virtual team has actually enhanced their relationships with other team members.

No Worries Here

The greatest concern expressed about working virtually was a potential negative impact on business relationships .This was particularly true among younger employees, who, while one might assume would be more comfortable with the technology, may also have a less established network of business contacts. Despite these speculative concerns, among those who have worked virtually, nearly all report that their relationships have either improved or remained the same.

8. Why Go for E-Leadership?

- A big advantage of having a virtual office is cost. Commercial space is fairly expensive no matter where your business is located. Crunch the numbers and see how much you could save in rent, utilities, Internet, and parking for your office.
- Another advantage of telecommuting is the lack of part of that word: commuting. Sparing your employees (and yourself) from the hassles of commuting by car or train could save everyone money, time, and stress.
- Some employees who telecommute say that their home life improves when they work from home because it allows them to see their family more.
- Other employees cite that an advantage of working from home is the opportunity to take care of personal things during breaks, like working out, laundry or grocery shopping.
- If your employees do a lot of creative work, such as designing or writing, it can also be beneficial for them to work in an environment free of distractions. A lot of offices are not conducive to focusing.

Many business owners think that the specific technology they use at their office is irreplaceable. But, as you'll note below, going virtual doesn't mean you have to be sent back to the Stone Age. In fact, most virtual employees can do their jobs remotely with a laptop, an Internet connection, a cell phone and some specific software programs. A lot of traditional office hardware such as a server, fax machine and telephone switchboard can be exchanged for alternative, low-cost services.

Most remote teams come about as a result of cost saving efforts. Reducing travel costs, saving money on remote offices or contracting work on a project basis rather than hiring full timers are all valid financial reasons but can you measure their impact?

The problem may be in your metrics. You have to measure output as well as savings, and that can be harder than it seems. Some of what you're measuring can be held against the bottom line (if they don't have to come to a meeting you saved the airfare, you can measure that), but what are the costs or productivity advantages between a team that's clicking and one that's dysfunctional? That can be harder to quantify.

9. Measuring Costs

The cost of managing remote teams is ideally measurable in terms of:

- amount of time
- increased risk
- mistakes and corrections (integrity and trust)

- lost opportunity
- And/or business infidelity.

One key cost is the establishment of the team. Due to the fact that the members will be remote, there needs to an evaluation of them at three levels.

- First, the members need to be an evaluated in terms of their skills and history against a clear set of requirements.
- Second, there needs to be a testing of the gravity (commitment/ability/interest/trust/drive) of the member to the team, mission and deliverables.
- Third, their ability to collaborate with other members of the team for the good of all involved.

The benefit of motivated, well-chosen team members reduces the measurable costs while increasing the value of what's delivered or produced beyond the expected value. Chemistry, clarity, and cooperation result in a value that renders the cost almost irrelevant.

10. Conclusion

The effort to manage a remote team is greater due to the checks and balances that need to be maintained to reduce cost and risk.

- First and foremost, creating a system of checks and balances within your existing framework of technology will reduce risk and increase profitability. Knowledge does not change behavior—"Knowing" what to do does not deliver the same results as creating a system of checks and balances that demonstrates you have benefitted from that knowledge.
- The second key element in creating a productive environment is maintaining open communication. Several factors can undermine such communication. An effective manager understands these factors and takes steps to overcome them.
- The third element is valuing diversity. Every team comes with a variety of perspectives, experiences, and needs. Knowing what they are and how this variety can be used is key to a successful organization.

Flexibility and creativity can be invaluable when it is constrained by clarity of purpose and specification of deliverables. The art of managing those constraints through clear, consistent, respectful communication and measurement is how managing a remote workforce yields successful results.

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Face Recognition with a mixed approach of GA

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ABSTRACT

There are a no. of face recognition algorithms including feature extraction , feature selection and feature recognition. This is the area growing more & more implementing 3D pattern recognition and video clips. This algorithm gives a simplified approach for recognizing a face from a repository of faces. A face recognition algorithm includes feature extraction which take out the necessary portions of faces or ROI(Region of Interest) and applies selection on this set of features
.Finally applies any recognition or matching algorithm to match with data set .In this paper, we make use of localization algorithm for making a localized portions of focus from a face clip .From this collected data ,we select the best feature set using mathematical equation of optimization. At last we apply ACO (Ant Colony Optimization) that is a genetic algorithm of optimization for recognizing the face .The algorithm gives good result with minimized cost & time factor.

Index Terms—ACO algo , localization ,mixed and simplified , Time-Cost Reduction

1. Introduction

Humans have always had the innate ability to recognize and distinguish between faces, yet computers only recently have shown the same ability. In the mid 1960s, scientists began work on using the computer to recognize human faces. Since then, facial recognition software has come a long way.Face recognition, an important means of biometric is a rapidly growing domain in pattern recognition. Usually,face recognition systems accomplish the task through face detection, facial feature extraction and face recognition .Face detection refers to isolating the face blob from the image, i.e. detaching it from the background or the surrounding environment. Facial features which make a face distinct play a vital role in identifying a person. On contrary to this, some other face recognition schemes focus on the geometry of the face. Finally, the recognition algorithm train the system to identify individuals using knowledge gained from the face detection / feature extraction phase. Face detection is a crucial step since subsequent procedures depends solely on its outcome. Many techniques have been employed to successfully localize and extract facial region from images. Most often, face recognition is considered to be a complex task due to enormous changes produced on face by illumination, facial expression, size, resolution, orientation, accessories on face and aging effects. The difficulty level increases when two persons have similar faces.

Face recognition is an important biometric technology which does not require the interaction of the individual but all other biometric recognitions includes human interaction for pattern matching . This characteristic of face recognition makes it different from other biometric techniques like fingerprint, iris, hand geometry and multimodal biometric techniques where the person to be recognized/identified must input his features to the recognition system. Thus face recognition can be used as a biometric in case of tracing criminals law enforcement techniques, multiple enrollments etc.

Previously a no. of approaches using genetic algorithms have been proposed, here we give a mathematical equation based algorithm for face recognition which includes following-

1. Feature extraction (mixed equation of filter & cropping)

2. Feature selection(use of optimization equation)

3. Feature Recognition (using ACO algorithm of optimization & Euclidean space)

Related work -

Feature extraction , selection and recognition has a wide scope of algorithms including simple to genetic and linear to multidimensional space .Those algorithms definitely their time cost , complexity cost , memory and computation cost .This algorithm use simplified equation from the algorithms & hence reduces time & complexity and even for future scope of change .Previously a no. of algorithm for 3 steps are used i.e.

Feature extraction-

PCA (Principal Component analysis) , KPCA(Kernel Principal Component analysis),Partial Least Squares , Edge detection Ridge detection which extracts features from face clip likewise eyes ,nose , forehead , chins , lips .

Feature Selection-

Simulated Annealing , Genetic algorithms, Meta heuristic methods like filter , wrapper , embedded methods which take small sorts of set for matching features instead of matching the whole set of features with every image of Database .

Feature recognition-

Genetic algorithm , Swarm intelligence algorithms or a no. of matching algorithms are used for recognition of required image from a database .

Proposed work-

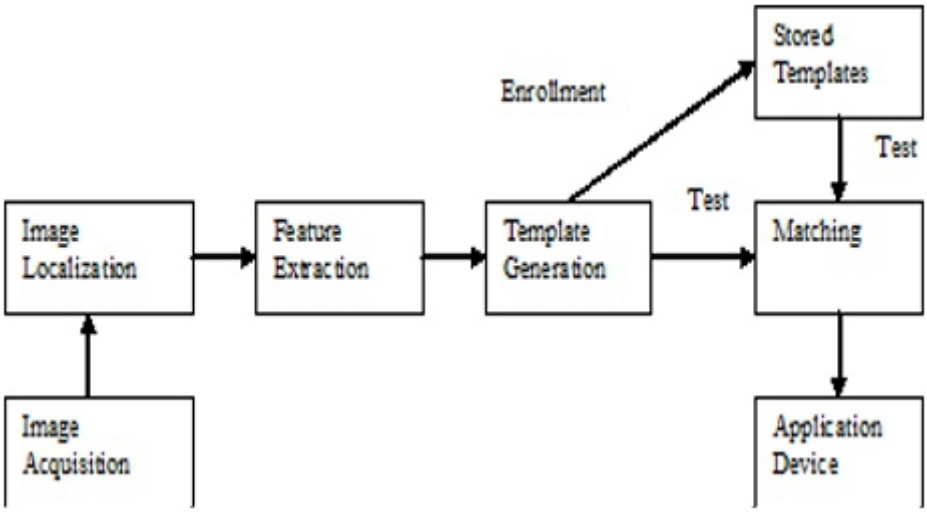

Figure 1.Procedure of face recognition

Here , in this work three set of images are stored for different purposes-

a. DataBase-that is having the set of pics for the experiment.

b. Feature List-From the database we extract only the features under interest , no need to compare the complete face clips features.

Figure 2:Feature List extracted

C. Optimized List-Only few of the features set is kept for matching & identification not the whole set.i.e. Set d is subset of Whole Set F where F is complete set of all the features.

We divide our algorithm at three stages of computation-

1. Localization
2. Extraction & Selection
3. Matching or identification

1. Localization-In the localization , we introduce a algorithm based on cropping according to the dimensions of the face clip.

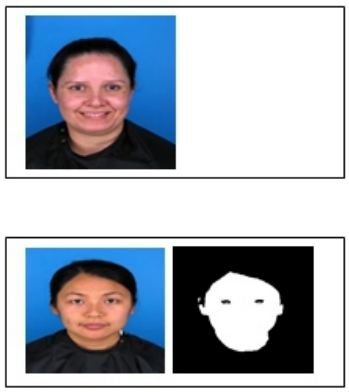

Figure 3:ROIs of test clip

A mathematical equation that gives the locality of the various features of the face under interest i.e. left eye , right eye,chin,lips.These four features are kept under interest and made to know using the equations .Region of Interest is computed sothat it further helps in the extraction of features of face clips in both the areas-

- **Database**
- **Testing Clip**

2. Extraction – Inspite of comparing the whole face clip of database with the test clip , we compare only features taken from face clip.These clips are saved in a separate data structure i.e. array or list .This list is of further two types-

One, list with features of Test Clip

Other , list with features of Database Clips

These features are extracted using the mathematical equation i.e. Mixed Filter equation having content of filter method.

As shown in figure 2,Left Eye,Right Eye ,Chin ,Lips.

Selection-It consist of only a set of optimized features .These features have the quality that these are sufficient for the comparison & matching process .Comring this subset of features gives the resulted & identified Clip that is recognized by this algorithm .

This selection process make use of an optimization algorithm having content of ABC genetic algorithm & Best first algorithm.It is a mixed & reduced equation derived from both the algorithms for the purpose of reducing the time,cost , memory & other resources .Hence increases the efficiency & speed directly that gives the scope of further improvement of addition of any other concept in future .

3. Recognition-Here we make use of ACO genetic algorithm that is used on the optimized set and full database set to identify the test clip .It is done with the use of ACO(Ant Colony Optimization) algorithm .It gives the result of matched image from the database.

Process of ACO:

Step 1:
This is the initialization step in which we will determine what is the population of ants which would be equal to the number of features. We will set the intensity of pheromone trial associated with any of the path among the features. That means that we will read the distance among features in the given image and determine the threshold value. In this we will also define the maximum number of iterations are allowed i.e. number of nodes and paths can be traversed.

Step 2:
This step contains generation of ant. In this we will place one ant on each selected feature. We can assign any ant to feature. This ant should visit all features and build the solution completely.

Step 3:
In this step we will talk about the evaluation criteria. In this step we will make use of the Euclidean Distance among the features. Then we will compare the distance obtained with the stored image distance. In this we can assume that if the distance among the features meet the requirement with more

than 40% deviation for all paths then we will exit.

Step 4:

In this step we will check the stopping criteria i.e. if ants have visited all features. Nodes/paths i.e. it reaches the maximum number of iteration allowed then we would exit otherwise we will continue.

Step 5:

In this step we do the process of pheromone updating i.e. pheromone intensity for the features, which are selected in step3, is updated. By doing this we will mark the path as verified and node as visited.

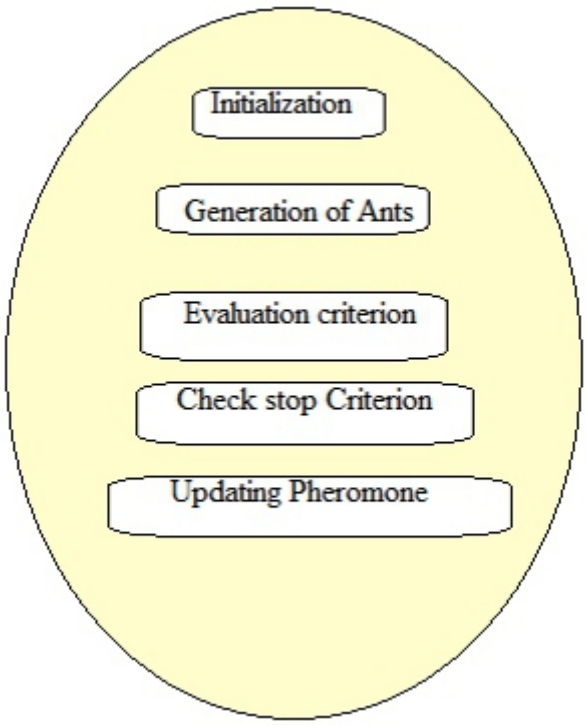

Figure 4: ACO genetic algorithm

This genetic algorithm with the Euclidean equation gives the correct results after implementation. Implementation is done in Matlab and gives very accurate & fast results .

Conclusion

Our work of recognition gives a good & accurate result with the database that is image set of static clips. This is simple & efficient algorithm does not centered around any pure algorithm rather a mixed equation set used for different stages. Use of 3 stages make it easier to divide the equations that make use of 3 set of list & data structure – database , feature set , optimized set. Database set is used in the starting & trained to make another set i.e. feature set. Finally Feature set is trained to make third set i.e. optimized set.

Future Scope

In this new era of technology , moving picture scanning is a quite common now a days i.e video surveillance ,CCTV camera .These cameras & devices captures the clips & saved for the any abnormal person identification or Identification of any suspicious person .Hence this security systems is quite usually implemented in major enterprise area .Our algorithm gives a big scope of any enhancement implementing moving clips identification , simultaneous addition of images in database instantly, changing light variations on images ,night time identification etc.

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Studies On Climate Change Impact On West Flowing Rivers Of Karnataka, India

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ABSTRACT

Observational records and climate projections provide abundant evidence that water resources are vulnerable and have the potential to be strongly impacted by climate change along with wide-ranging consequences on human societies and ecosystems. Analysis of hydro-meteorological data are critical in order to facilitate better water management practice in future. In Indian context, significant research work has been carried out in analyzing impact of climate change on major river basins. The paper describes the impact of future climate change on small river basins along the west coast of India. For the present study, 15 years historical data is used from 5 hydro-meteorological stations, 8 rain gauge stations and 8 river gauge stations situated along the west flowing rivers of Karnataka. The Mann-Kendall test and Sen's slope estimator test are employed to analyze the significance and magnitude of the trends. The significant trends at 95% confidence level are modeled for the linear relations. The paper also discusses the Soil Water Assessment Tool (SWAT) analysis for the flow simulations in Kali river basin, which is one of the major west flowing rivers.

Based on the results of non- parametric tests for annual average temperature, an increasing trend of 2.4ºC to 4.9°C/100 years was predicted. The annual average actual evapo-transpiration shows an increasing rate varying from 0.44mm to 1.07 mm/100 years. The rainfall trend analysis results denote an increasing trend in the post-monsoon rains in the month of October (33 mm and 12.7 mm/ decade) whereas 4 rain gauge stations display no significant trends. The river Barapole shows significant increasing trend (89.59 cumecs/decade) in runoff whereas river Dusginala shows decreasing run-off in July and increasing trend in October.

The SWAT model performed effectively in case of daily flow simulations rather than monthly predictions. The coefficient of determination (R2), Nash-Sutcliffe efficiency (ENS) and root mean square error (RMSE) for daily scale calibration of SWAT are 0.781, 0.247 and 2.727 respectively and for validation 0.436, 0.167 and 8.768 respectively.

Keywords: Climate change; Trend Analysis; Non-parametric Test; SWAT;

1. Introduction

Climate change is one of the major challenges which adds considerable stress to our societies and to the environment. From shifting weather patterns that threaten food production, to rising sea levels that increase the risk of catastrophic flooding & calamities, the impacts of climate change are global in scope and unprecedented in scale. Characterization of climate variables like temperature, actual evapo-transpiration, rainfall and runoff is essential to assess the future changes in climate, which in turn affect anthropogenic activities and the natural world. Hence, it is important to investigate the trends in these

variables for best of the future water management and life sustenance. USGS (2002) has recommended a number of statistical techniques for the trend analysis.

As per the investigations earlier on, it is evident that the global average surface temperatures are expected to rise by about 1.4°C-5.8°C by the end of the century (Ministry of Environment and Forests, 2004). With the exception of the year 2000, all the years of this century rank among the 10 warmest years of the entire observational period since 1850.In the northern hemisphere, India has been experiencing delays in rain, drastic variation in temperatures and durations of dry and wet periods, even floods and famines lately. The first attempt to quantify the impact of climate change on the water resources of India was made by Gosain et al., (2006) as a part of National Communication (NATCOM) project. The study used HadRM2 daily weather data to determine the spatio-temporal water availability in the river systems and a distributed hydrological model SWAT was used. The study was carried out for the 12 major rivers of India, using 40 years of simulated data. The study came out with a result that the severity of droughts may get deteriorated in some part of the country and enhanced intensity of floods in other parts of the country and an overall reduction in runoff under GHG (Greenhouse gas) scenario. A close examination of results reveals that the increase in rainfall is not resulting always in an increase in the surface runoff as may be general perception, as in the case of Cauvery river basin. An increase of 2.7% of rainfall has been observed in the basin but the runoff has in fact reduced by about 2% and the actual evapo-transpiration has increased by about 7.5%. The detailed results for two river basins, viz. Krishna and Mahanadi, one with predicted severe drought conditions and the other with pronounced flood conditions, respectively have been discussed.

Indian Scenario

The Ministry of Environment and Forests (2010) in collaboration with Indian Network for Climate Change Assessment (INCCA) has published a study dealing with 4 x 4 Climate change assessment for the Indian Scenario through a sectoral and regional analysis for 2030s. The long term annual and seasonal temperature, precipitation, pattern of extreme events over the century, sea-level rise across the Indian coast based on tide gauge records available from Mumbai, Kochi, Visakhapatnam and Diamond Harbor have been used for trend analysis. The climate has been projected to 2030's (average of 2021-2050) using regional climate model PRECIS which is a version of the regional climate model HadRM3. The salient findings of the study include, average annual temperature is likely to increase to 26.8°C–27.5°C in the Western Ghats during 2030s. Also, the rise in temperature with respect to the 1970s will be between 1.7°C and 1.8°C and the intensity of rainfall is likely to increase by 1-2 mm/day in the same region. The results also indicate that on an average, the sea level along the west cost of India has been rising at the rate of about 1.3mm/year. The increase in extreme rainfall may lead to flooding, and

hence increase in morbidity and mortality due to flood-related diseases such as cholera and malaria in Western Ghats. However, adaptation methodology for such a change has yet to be discussed. Kumar and Jain (2011) have analyzed the trends in annual and seasonal rainfall and rainy days, over 22 river basins across India, using daily gridded rainfall at 1°x 1° resolution for the period of 1951-2004. The results showed that the west flowing rivers to south of Tadri experienced the maximum number of annual rainy days and Luni and other west flowing rivers of Kutch experienced minimum number of annual rainy days. A decreasing trend in rainfall was observed in the range of 0.45 to 4.93 mm/annum for 15 rivers like Brahmaputra, Indus and Godavari while 6 basins in the west coast showed increasing trend in annual rainfall in the range of 0.27 to 10.16 mm/annum. The seasonal analysis showed decreasing rainfall over 13 river basins during the pre-monsoon season, 16 river basins during the monsoon, 8 basins during the post-monsoon and 2 river basins during the winter season.

It is evident that climate change impact on most of the major Indian River basins have been carried out while for small river basins they are yet to be quantified. Out of the major river basins of India, the river basin from Tadri to Kanyakumari is considered as one unit which consists of small river basins having similar hydrological and geological conditions. The climate change impact on these rivers are yet to be established and a preliminary attempt is being made in the present study to assess the climate change impact on west flowing river basins. The study area for the present investigation is shown in Figure 1. Three major zones make up the physical feature of study area and they are the Coastal strip, the Western Ghats, and the Deccan plateau. The climate of the region is per-humid to sub-humid tropical climate. The annual rainfall varies from about 2500mm at the coast to as much as 6000mm in the mountains Western Ghats primarily due to orographic effects. The plateau region receives rainfall less than about 2000mm.

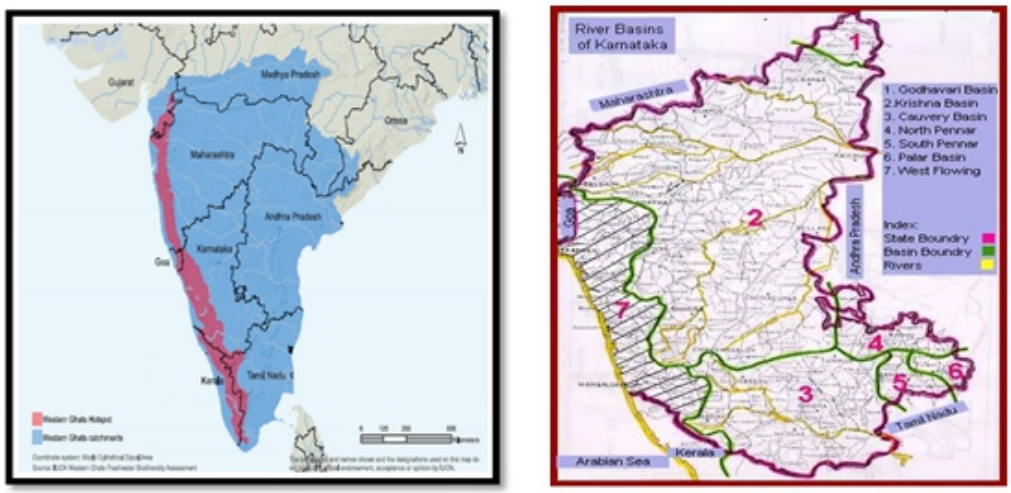

Figure 1 Study area map showing west flowing river basins

2. Experimental program

In the present study, the temporal analysis of rainfall, temperature, actual evapo-transpiration and runoff has been carried out at various time scales (daily, monthly, seasonal and annual) for each station in proximity to selected six west flowing rivers of Karnataka ie. Aghanashini (Honnavar, Kumta), Barapole (Kakkathuhole, Konganahole, Mercara), Kali river (Barchinala, Dusginala, Joida, Kadra, Karwar), Mahadayi (Belgaum, Gavali), Sharavathi (Shimoga, Thirthahalli) and Varahi (Dasanakatte, Hosanagara). The data required for the analysis were obtained from the India Meteorological Department (IMD), Pune and Karnataka Water Resources Department for the period 1985-2004. Actual Evapo-transpiration has been calculated using Hargreaves method which has been found suitable for the Western Ghats region of Karnataka. To identify the existence of any trend in the climate variable time series, Sen's Slope Estimator test and Mann-Kendall test were used. All the trends having p-value<0.05 are considered significant. SYSTAT 13 (Cranes Software International Ltd. 2011) has been used for the trend analysis in this study. The significant trends found on all time scales of trend analysis are fitted with a linear model.

The ArcSWAT 2009 (Winchell et al., 2007) is used in the present study for Kali river basin and the input layers for the model are created using ArcGIS 9.3 and ERDAS IMAGINE 9.2. The watershed has been delineated for 25% area of Kali river basin, as the outlet point was considered at Barchinala. The observed flows have been extrapolated based on the area co-efficient for analysis. The SWAT model is first run using the default parameters set by ArcSWAT. The data such as humidity, solar radiation and wind speed data were not available and are estimated by SWAT weather generator. The critical parameters taken into consideration for calibration of the model are Curve number (CN), Soil evaporation compensation factor (ESCO) and Available water holding capacity (SOL_AWC). The calibration is performed by comparing the simulated (daily and monthly) stream flows at the main basin outlet with observed flows. The flow values are compared for time period between 1/1/1995 to 31/12/2002. A number of simulations are run with an attempt to match the simulated flows with the observed by adjusting the above mentioned parameters taking into account their acceptable range of values.

3. Results And Discussion

Climatic Parameters

The results obtained from the statistical tests for annual average (AAT), monthly and seasonal values of maximum temperature at 95% confidence level are as shown in the Table 1. Karwar (Kali river basin) and Shimoga (Sharavathi basin) stations display highest trends for temperature and actual evapo-

transpiration. The linear regression plot for maximum temperature for Karwar station is shown in the Fig. 2. It was observed from the results that, Belgaum, Karwar and Shimoga show an upward trend in annual average maximum temperature with an increase of 2.64°C, 4.94°C and 2.42°C per century. There was no clear trend for rainfall. The annual average actual evapo-transpiration shows an upward trend at Belagavi and Karwar by 0.442 mm and 1.073mm per century. The trends of rainfall variation show a large variability in magnitude and direction from station to station.

Flow Variable

The trend analysis of river flow at five gauging sites was carried out on annual, seasonal and monthly basis which indicates mixed trend using non- parametric tests. The runoff at Barchinala shows an upward trend in the pre-monsoon season by 7.648 cumecs/decade while Dasanakatte station affirms decreased flow in pre-monsoon season and increased flow in the post-monsoon season at the rate of 69.6cumecs/decade. The river Barapole showed significant increasing trend (89.59 cumecs/decade) in runoff at both the stations considered whereas Dusginala river showed decreasing run-off in July and increasing trend in October. There is no significant trend for the monsoon period. The Ministry of Environment and Forests (2004), Gosain et al. (2006) and Gosain and Rao (2007) predict that by 2050, the southern Indian rivers may experience regular or seasonal water stressed conditions.

Table 1 Results of slope estimator test and Mann Kendall test in trend analysis for maximum temperature

Station	Time scale	Slope estimate	Z	p-value	Trend
Karwar	Annual Avg temp	0.057	3.429	0.000	Upward trend
	Jan	-0.001	0.000	0.500	No trend
	Feb	0.083	1.959	0.025	Upward trend
	Mar	0.078	1.785	0.037	Upward trend
	Apr	0.084	2.519	0.006	Upward trend
	May	0.048	1.190	0.117	No trend
	Jun	0.049	1.679	0.047	Upward trend
	Jul	0.028	0.980	0.164	No trend
	Aug	0.097	3.429	0.000	Upward trend
	Sep	0.052	2.099	0.018	Upward trend
	Oct	0.027	0.840	0.201	No trend
	Nov	0.083	1.749	0.040	Upward trend
	Dec	0.061	1.505	0.066	No trend
	Winter	0.031	1.329	0.092	No trend
	Pre-Monsoon	0.027	0.945	0.172	No trend
	Monsoon	0.012	0.560	0.288	No trend
	Post- monsoon	0.003	0.980	0.164	No trend

SWAT Model

The Soil Water Assessment Tool, ArcSWAT (2009.93.6) has been used to simulate and validate stream flow in Kali river basin, Karnataka. The ArcSWAT interface facilitates pre-processing and requires formatted inputs to graphically represent the outputs. The watershed delineation results in 1287.828 km2 area (Figure.3) and 9 sub-basins are produced. Figure 4 shows the results between the observed and simulated stream flows on daily during the calibration phase. The SWAT model estimates for the low range of observed values, which range between 0 and 50cumec well. The model over estimates the peak flows on the daily basis. The co-efficient of determination for daily and monthly simulations are 0.796 and 0.437 respectively. The model was validated for the period 2003-2005. The co-efficient of determination for daily flow and monthly flows were 0.436 and 0.593 respectively. The coefficient of determination (R2), Nash-Sutcliffe efficiency (E_{NS}) and root mean square error (RMSE) for daily scale calibration of SWAT are 0.781, 0.247 and 2.727 respectively and for validation 0.436, 0.167 and 8.768 respectively.

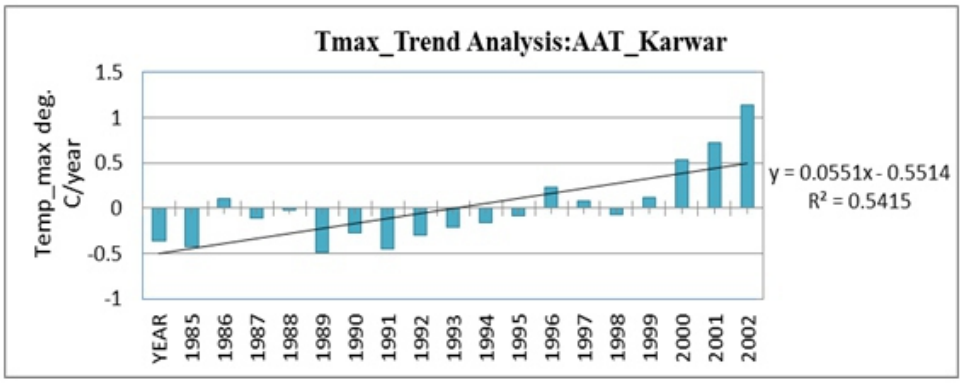

Figure 2. Linear regression plot of maximum annual average temperature

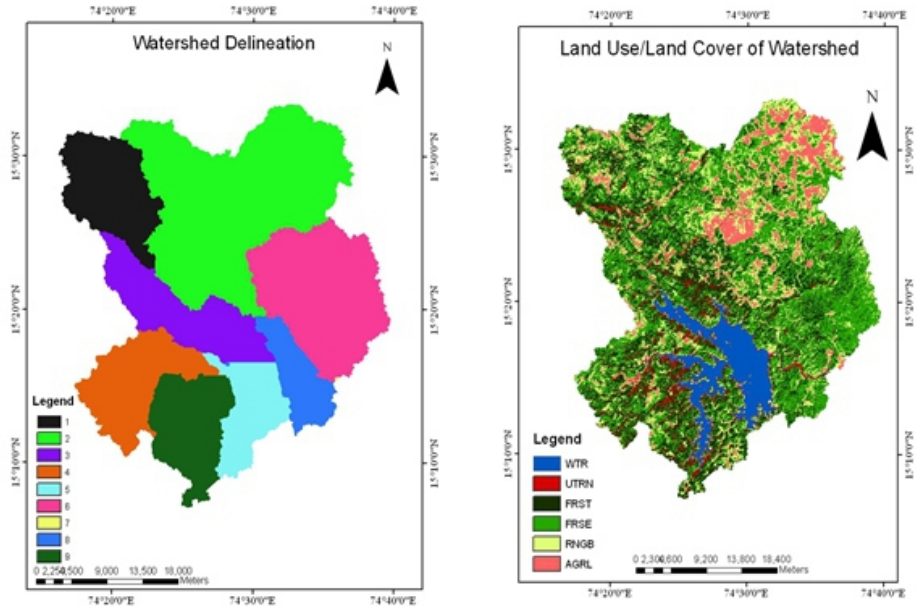

Figure 3. Watershed delineation and land use/land cover classification in ArcSWAT 2009

Figure 5 shows the time series hydrograph of the daily flow values for the period 1995 to 2005. It is observed that a maximum flow had occurred with sharp peaks during the first seven years. Then there was a constant flow during next five years. The predicted value for the year 1997 is found to be overestimated by the model. The overall performance of the model is found to be satisfactory, as most of the predicted values match the observed values.

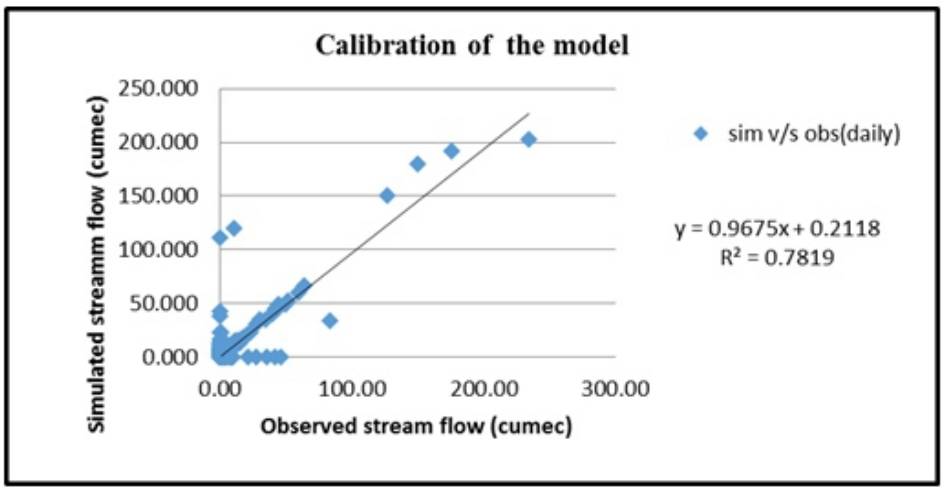

Figure 4 Simulated v/s Observed daily stream flow

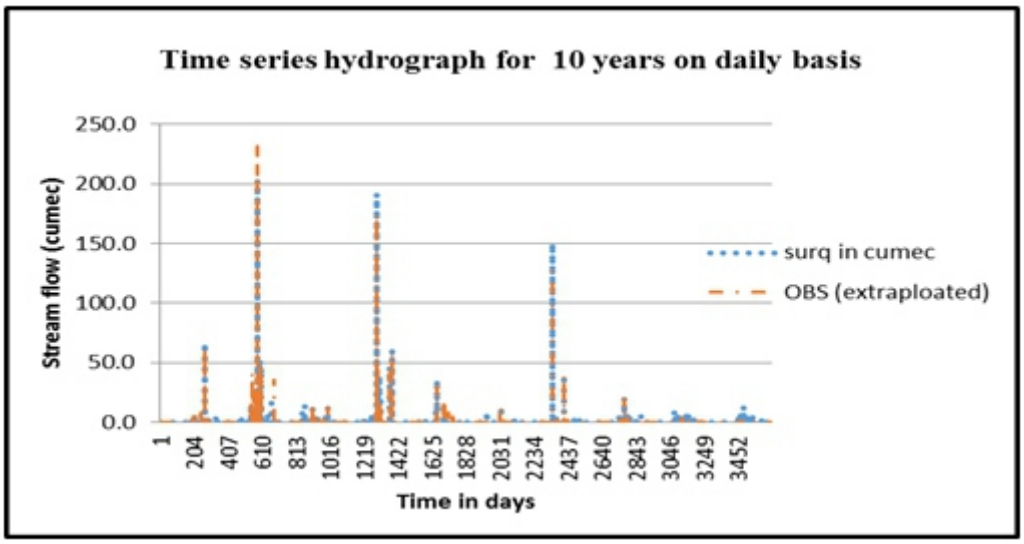

Figure 5 Time series hydrograph for 10 years on daily basis

Conclusions

Trend analysis can be an effective tool to analyze the changes in the climatic variables. It performs well with large amount of historical data. In the present study, 15 years of data has been used and the trends indicated in the variables are agreeing well with the previous investigations. The river basin extending from Tadri to Kanyakumari has small river basins with almost identical hydrological and geological features. Climate change impact on such river basins is yet to be investigated and the present study may

form an initiative in this regard. The average annual maximum and average annual minimum showed increasing trend with 2.42°C to 4.94°C rise and 3.15°C rise over a century respectively. The Mann-Kendall test and Sen's Slope estimator tests have rendered significant trends which showed good linear fit. The actual evapo-transpiration at 2 stations also indicated upward trend with an increase of 0.4 mm to 1.07 mm/100years. The rainfall trend analysis at the stations Gavali, Karwar and Mercara indicated that the post-monsoon rainfall follows an increasing trend, as they show upward trend in monthly rainfall during the month of October at the rate of 33.4 mm/decade and 12.7mm/decade and downward trend in monthly rainfall in the month of August. Kadra, Kumta (coastal stations), Joida and Thirthahalli showed no trends in rainfall. The rivers Mahadayi, Kali and Barapole may have decreased annual runoff due to variation in the seasonal rainfall while no clear trend was obtained on seasonal and monthly basis over the study area. The SWAT model applied to Kali river basin performs effectively for daily flow simulations rather than monthly predictions. The statistical analyses of SWAT gave satisfactory results during calibration and validation processes.

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Preservation and Conservation of Resources in Special Library: Necessity for Posterity

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ABSTRACT

Libraries are changing to meet the users' expectations and investing huge resources in acquiring, subscribing and collection development but due to any good reason is not formulating or giving adequate attention to preservation and conservation of library resources for present and future usage. Thus, it is high time to take effective steps for protecting the resources by justifying the investments for posterity.

Keyword: Preservation and Conservation, Resource Preservation, Special Libraries

1. Introduction

The libraries are transforming with emerging and cutting edge technologies and provide array of services to the present generation users' but to harness and maximize the usage it is inevitable to take adequate steps and formulate the policy for preservation and conservation of library resources. Accordingly, right action, mindset from the librarian/staff will help in saving the 3Ms i.e. money, manpower and material and also lead to collection development as per the users' information needs and library's policies.

2. Preservation and Conservation

Information and knowledge became an essential part of human life and without information humans can't survive in today's technological environment. The value of information depend on the survival of the medium in which it is held as information never die or disappear and it is known fact that libraries, institution or organization are preserving the information for present as well as future generation. Libraries, museum and archives play a pivotal role in preserving priceless cultural heritage materials of any country and thus play a significant role in national development. The fundamental duty of these institutions is to acquire and preserve the documents for the community benefit. Preservation is an umbrella term which includes all the managerial and financial considerations such as storage, accommodation provision, staffing levels, police, techniques, and methods involved in to preserve all types of library material and the information contained in them. In simple words it is an activity for safeguard reading materials as long as possible. Preservation and conservation of documents is an important aspect for librarians, information scientists, archivists, scholars and also of different types of

institutions and organizations. Dr. S.R. Ranganathan defined library as a public institution or established charged with the care of collection of books and the duty of making them accessible to those who require them. It is the responsibility of the authorities to preserve the collection and make it accessible to the public.

The problem of preserving and conserving of rare documents continued ever since human beings acquire the knowledge of writings. With the advent of computer and modern technologies digitization has proven to be solution for nearly every type of documents held by libraries like maps to manuscripts and moving image to musical recording can preserve easily and ensure the longevity of information created or converted to digital format. Digital preservation is set of process and all activities that ensure continued access to information of all kind of information records, scientific and cultural heritage existing in digital format. Preserving the document is therefore a critical issue for libraries to safeguard their electronic resource to traditional resource.

3. Definition of Preservation and Conservation

Preservation and Conservation is primarily concerned with the survival of information in a usable form for as long as it is required. Preservation is not just concerned with the conservation or restoration of physical artifact but include all of the strategic and organization consideration that relate to the survival of information over time.(Baldev kumar,Jodha Ram and Aswani Sharma, 525).

Preservation is the activity that attempts to keep what you want and need for as long as you want or need it. Preservation include all the managerial and financial consideration including storage and accommodation provision staffing level polices techniques and methods involved in preserving library and archival material and information contained in them.(Kaur, 151).

Preservation and Conservation is anything beyond data means that we also have to preserve other things the communication of the information the context of the document the integrity of the record and the value of archives.(Baldev kumar,Jodha Ram and Aswani Sharma, 525).

It is an occurrence of improvement by virtue of preventing loss or injury or other changes.(Madansing, D. Golwal and Chavan Vishakha. D, 587).

4. Special Library

Special libraries are those which contain library materials and information that are specialized rather than generalized in character. Special libraries serve special clientele, special group or people who use

them. Special libraries never used by everybody and are used rather by the people who are associated with the organization that support; the libraries have special interest so users also have special interest and skills. Special libraries are characterized of smallness in nature. The typical special library visualized as small in staff size and usually small in space occupied and size in collection. These libraries are differentiated from other libraries by their emphasis on the information function, major goals of special libraries information can often be provided in anticipation of the need for it. It is the characteristic that best define the special library as "special".

The establishment of the scientific, technical, and research institution and such other organization laid down the foundation for the genesis of special libraries. The emergence of these libraries has been largely influenced by the following reasons:

- Exponential growth in the scientific and technical libraries.
- Preservation organization maintenance and dissemination of specific information.
- Active participation in the resources sharing activities.
- Exact and precise demand for specific information.
- Speedy and easy access to the vast and ever increasing quantities of published information to scientists research scholars and technologist.
- Utilizing the research result for further growth of research areas.
- Use of new technological developments and information technologies viz. automation, networking, electronic communication etc.
- Need for eco- friendly environment.(Strable, 2-3).

5. Special Library Collection

A special library has number of resources indifferent forms to meet its user's need. Some of them are as follows:

1. Print material

(a) Books

(b) Back volumes of periodicals

(c) Current Journals

(d) Theses/Dissertations

2. Electronic media

(a) E books

(b) E journals

(c) Databases

(a) Video cassettes

(b) Audio cassettes

(c) CD (s)

(d) DVD (s)

Note: Multiple databases are created according to the collection of media, so as to facilitate the retrieval of information separately as well. These databases for e.g. are:

- Journals
- Books
- Theses
- Audio cassettes
- Video cassettes
- CD-Rom (Langner, 11- 24).

Thus, preservation and conservation play a vital role to safeguard all the library resource which is procured by the special libraries.

Need of preservation and Conservation

- What to be preserved
- How to be preserved
- Duration of preservation

These comes under the preview of preservation polices. Libraries provide access to information in printed form wherever available in electronic form. Following are the needs of preservation:

- **User Perspective:** Users' expectation always change and for accurate and authentic information. Yet, users especially, research scientist, research scholars need both traditional document as well as electronic and current information. So preservation of information according to user point of view is basic concern.

- **Institution responsibility:** Libraries Archives and other custodians have responsibilities of their properties so institution should plan for reading material including their maintenance preservation and distribution.

- **Mission of Parent Institution:** The first object of libraries Archives and other custodians is to satisfy the user's expectation and user requirement. They should preserve document in all format.

- **Storage media:** Storage media is having different format such as text, image, graphic, video, and sound different storage capacity like floppy, disk, cd-rom, vcd; etc and different durability.(Shelkes, M. Khapardev. S and Sonwane.S.S, 516).

Library material especially print one has a limited life through Preservation and Conservation library can increase the age of library reading material. The Causes of library reading material are due to Deterioration.

Causes of deterioration of library material

Deterioration is a change of original state of any material by interaction between the object and the factors of destruction. The different types of deterioration of the paper based materials are reflected in wear and tear, shrinkage, cracks, brittleness, warping, bio-infestation, discoloration, abrasion, hole, dust and dirt accumulation etc. Generally library materials are susceptible to deterioration by the following factors:-

1. Environmental (climatic Factors) factors like light, heat, humidity and moisture, Dust and dirt, water.
2. Biological factors: - Microorganisms, insects and rodents.
3. Chemical factors
4. Human factors and
5. Disasters. (Sahoo Jyotshna, 1-3)

6. Methods of Preservation and Conservation

Preservation methods are adopted based on location, weather, and environment, these conditions can be attained using an appropriate environment and the various other methods like chemical treatment, fumigation, restoring faded links, bleaching, etc.

Environmental conditions: It is very difficult to control atmospheric conditions, which are constantly fluctuating, the control of temperature and humidity inside the room implies their constant

measurement. A number of sensitive instruments are available for measuring temperature and humidity, some instruments are of the recording type and make it possible record temperature and humidity or too little of it is equally dangerous. The recording instruments help us to know the actual conditions of humidity.

Fire: Fire may be prevented by banning smoking in the library. Inflammable articles like kerosene, petrol, waste paper should be kept outside. Electronic wiring must be enclosed in metal conducts to localize the effect of sparks due to short circuits. Control switches for lighting should be fixed outside the room and the mains should be off when the stack area is closed. Sufficient number of fire extinguishers should be kept at strategic points in the library.

Human Beings: Readers, with a stealing inclination, can be checked through preventive measures like spying and installing thief-catching devices. The fundamental factor in minimizing unnecessary damage to the library materials also depends on the careful handling of the materials on the part of both staff and reader, Videotapes or slides regarding the handling of books should be shown to the new employees and the readers. Books should never be pulled of the shelves by head caps when more than four to five books have to be carried within the library, care should be taken to reduce the possibility of dropping of the books. Books should not be jammed on to over crowed shelves that may cause damage to binding.

Preservation from Insects and Pests: Insects and pests can be controlled by chemical treatments like fumigation and using chemicals in the affected areas. The optimal range of temperature for microorganisms to survive is 20 oC to 40 oC and for insects is 20 oC to 40 oC. Termites, creation of chemical barrier around the building using crude creosote in kerosene (1:1) or Sieren in water (1:60) is recommended, Dieldrins, insecticides like DOt are being used in the public libraries to control a variety of insects. DDT acts as a stomach poison to insects and affects their sensory organs and nervous system and causing violent agitation followed by paralytic death. Physical methods of preservation and conservation include leather book binding: racking, shelving and dust removal.

7. Conclusion

Preservation and Conservation of documents have become important aspects of the modern day society. To conserve, preserve and digitized the documents became the primary responsibility of the library professionals therefore, keeping in view the nature/availability of the rare collection and to analyzed the various preservation methods like digitization, climate control, storage methods, binding methods, use of chemical for insects, lamination, scanning methods, microfilm storage methods modernization

etc. In the word each country has rich cultural heritage material so it is primary duty of any country to preserve and safeguard their cultural heritage material. Libraries are keen to find out causes for deterioration of library material and so that necessary steps can be taken to protect their materials. Preservation is the oldest and most fundamental function of libraries and Archives. It is widely said that "Prevention is better than cure ". The same is true science of preservation. The concept of preservation is now gradually becoming a central issue in modern librarianship, it plays a key role in the preserving the documentary heritage for Posterity. Therefore in every library at least preventive conservation should be in practices to keep the documents in healthy, good and usable conditions.

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A Study On Customer Satisfaction With The ATMS Of SBI And ICICI Bank And Role Of ATMS For A Greener Environment

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ABSTRACT

Care for the environment has been a major consideration among production companies for several decades. Roughly, banks started devoting attention to this matter only halfway into the 1990s. Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

In banking industry, e-services are modifying the way business is conducted. Electronic based business models are replacing conventional banking systems and almost all banks are rethinking business process designs and customer relationship management strategies.Indian banking scenario underwent a dramatic changes after the implementation of the new economic policy that triggered out the economy in rapid speed. Banks have equipped themselves immensely with the help of IT development in providing the services in better way to its customers.

The banking system is facing challenges with stiff competition and advancement of technology. It becomes imperative for service providers to meet or exceed the target customers' satisfaction with quality of services expected by them. This paper explores the significant dimensions of ATM (automatic teller machine) service quality and its effect on customer satisfaction. A Questionnaire was used to collect the data from a convenient sample of customers of SBI and ICICI bank too.A few inputs relating to the contribution of ATMs towards being environmental friendly have also been discussed.

Key words: ATMs (Automatic Teller Machines), evolution, customer satisfaction, customer needs,environment.

1. Introduction

ATMs have become a way of life and the banks which do not offer ATM services are by and large, not regarded favorable by the customer.The ATM industry consists of multitude of activities which is a major cause of making e-banking a 24 hours service. In fact, electronic banking is profitable and possible due to services of ATMs. Because this service provides immense help to the customers in withdrawing cash from anywhere, anytime.

There is quite a large prediction of ATM growth in India. When compared to the past few years, Indian banks have established ATMs at the hook and nook of the country to extend their facilitiesServices like

24 hour banking, service at door step, telephone banking, internet banking, Extended Business Hours (EBH), speedy processing are only a few to mention. Greater part of today's bank transactions take place somewhere else other than in branch premises. This shows the growth of "virtual" banks in India. With convenience, speed, efficiency and effectiveness, these virtual banks, in effect have opened up a new world of possibilities and brought major changes in providing a broad range of services. Virtual banks are now seen as an answer to the challenge of designing a new service channel that is fully secure, functional and which customers can readily learn to use and trust it. Virtual banking -- a powerful "value added" tool -- has become the focal point for banks to attract and retain customers.

ATMs offer hassle-free cash withdrawal. No more fighting with the bank's teller for change and fresh notes. The total cash movement through ATMs in India is already between Millions of Rupees (local currency) every year. In future, things are going to be even more different and challenging. The ATM has become a medium for non-cash transactions such as payment of bills, insurance payments, printing of statements or even accessing the internet.

2. Problem Identification

ATM services have become one of the criteria for a bank's successful reputation. This study focuses on customer satisfaction level in the two leading banks of India, SBI and ICICI bank. As the use of ATM is increasing day-by-day, it is important to study the insight about the level of customer satisfaction with respect to various aspects of ATM service and to identify the problem areas and proposed recommendation leading to improvement.

The basic requirement for conducting this study was to examine the customer feedback and their knowledge about ATM services provided by the SBI and ICICI Bank. The study was conducted to find out the level of satisfaction about the services provided by both the banks among its customers.The paper also provides few details regarding the eco safety measures the can be implemented through the use of ATMs.

3. Literature Review

The concept of ATM is quite old and has been developing throughout. No doubt, a fair number of theoretical and empirical researches have been undertaken throughout the world. Manager FSDNCR Corporation India Pvt. Ltd. (2008) in his article, “ATMs: Changing Fundamentals” suggested that he Indian ATM industry has seen explosive growth in recent times and Banks have committed to substantial capital outlays on ATM deployment, recognizing the significance of the 3 Ms – Maintenance, Monitoring and Management – of the ATMs to make the self-service channel a reliable and profitable one.

In another article James J. MacAndrew (2003) talked about the various utilities of ATMs which has given worldwide popularity. The utilities include withdrawal of cash as per convenience of the customers than during the banking hours at branches. Besides providing off time and off shore services, there is reduction of cost of servicing.

4. Background Of The Study Area

The change in banking in the last few decades is magnanimous when compared to the entire period of history of banking in India. Profitability, which remained a taboo for bankers for a long since independence has become a buzzword today.Thus, competition driven by technology fuels banking today.It is becoming clear that "technology " can make bankers sail through the sea of competition, computerization of branches ,introduction of cash management products, remote access logins for corporate, mobile banking, internet banking and ATM banking are a few ways by which bankers beat competition.

The most rampant among them is ATM. An automated teller machine or automatic teller machine American, Australian and Indian English), also known as an automated banking machine (ABM) in Canadian English, and a cash machine, cashpoint, cashline or sometimes a hole in the wall in British English, is a computerized telecommunications device that enables the customers of a bank to transact without the need for a cashier, human clerk or bank teller. ATMs are known by various other names around the world.

ATM is designed to perform the most important function of bank. The plastic card is replacing cheque, personal attendance of the customer, banking hour's restrictions and paper based verification. ATMs are used as spring board for Electronic Fund Transfer. ATM itself can provide information about customers account and also receive instructions from customers - ATM cardholders. An ATM is an Electronic Fund Transfer terminal capable of handling cash deposits, transfer between accounts, balance enquiries, cash withdrawals and pay bills In many parts of the world the majority of bank customers regularly use ATMs and today's western youth have not known a world without them. For them, the prevailing perception of a cash machine is that of a tool providing a familiar functionality of basic financial information and dispensing cash. The technology is hidden from sight; the computer is invisible. It has taken approximately 30 years to establish ATMs as ubiquitous examples of public walk-up-and-use devices. The adoption has not been straightforward, requiring trust in the technology and willingness to modify behavioral strategies in the very sensitive domain of personal finance. Financial institutions have played a major, sometime coercive, role in encouraging ATM adoption. The ATM flourishes within societies where time is precious and money readily available. This culture is composed of individuals, who have

personal bank accounts and access to a wide range of technology.

In India, ATMs are being introduced on a large scale. It concentrates mainly on urban India. Indian Banking industry is witnessing an unprecedented competition. To stay ahead, banks are coming up with plethora of services to lure customers.

5. ATM History

In simultaneous and independent efforts, engineers in Japan, Sweden and Britain. Developed their own cash, machines during the early 1960's.the first of these that was put into use was by Barclays bank in Enfield town in North London, UK. On 27thJune 1967 this machine was then first in the UKand was used by English comedy actor Reg Varney, at the time so asto ensure maximum publicity for the machines that were to become mainstream in the UK. This stance of the invention has been credited to John shepherd-Barron of printing firm De La Rue, who was awarded an OBE in the 2005 New Year Honours.

The first modern ATM came into use in the year December 1972 in the UK; The IBM 2984 was designed at the request of Lloyds bank. The 2984 CIT (Cash Issuing Terminal) was the first true cash point, similar in function to today's machines; cash point is still a registered trademark of Llyods TSB in the UK. All were online and issued a variable amount which was immediately deducted from the account .A small number of 2984s was supplied to a US bank. In 1967 John Shepherd Barron, invented and installed an ATM in Barclay's Bank in London. The machine was made by De La Rue Instruments and it used paper vouchers that had to be purchased from tellers in advance. The machine was named De La Rue Automatic Cash system, or DACS.

6. ATM History In India

In the world of banking, the developments in information technology had an enormous effect in development of more flexible payment methods and more userfriendly banking services. Online banking and other electronic payment systems are new and the development and diffusion of these technologies by financial institutions is expected to result in a more efficient banking system. This technology offers to the institutions an alternative or non-traditional delivery channels through which banking products and services can be delivered to customers more conveniently and economically without diminishing the existing service levels. However the entry of private sector has posed the challenge of competitive environment to the public sector banks in India.

These private sector banks have brought with them the advanced banking technology with alternate

delivery channels such as Phone Banking, Mobile banking, Internet Banking, ATM etc. Out of all these e-banking services, theever demanding and fulfilling the requirement of the customers is automated tellermachines. So the efforts of the banks are to manufacture and install as much ATM'swhich could serve its services to the entire customers of the nation, be it rural people or urban people. To suit the needs of rural people, additional security device innovationsare being made in the form of using camera inside the ATM which could compare the records with thumb impression (Bio-Metric) of the client for identification. The management of ATM includes loading of ATM with cash, arranging of money with bank with which cash is loaded, service of car that delivers cash if it is offsite situated, providing insurance for all areas such as theft of cash from ATM. Due to large expense involved in setting and situating an ATM at a particular place, these services are now days offered by independent service providers like privately owned ATMs.

7. Benefits To Different Users

To Customers

i. Convenience to transact whenever and wherever required
ii. Consistency of service
iii. Variety of service at one point
iv. Easy availability
v. Security of transaction due to use of PIN
vi. Sense of security due to less cash holding
vii. Availability of good quality currency notes
viii. Enhanced interest earnings.

To Banks

i. Competitive edge/improved image
ii. Reduction in staff workload and drudgery
iii. Rationalization of staff strength with freed staff who can be focused on marketing, cross selling and customer relationship
iv. Reduction in transaction costs and overhead
v. Thinning of crowds in banking halls resulting in improved buying satisfaction and lesser need for space
vi. Improved customer satisfaction
vii. Improved housekeeping
viii. Increased customer base

ix. Advertising possibility on the screen of ATM display of promotional material
x. Provision of product information at the ATMs
xi. Increase in miscellaneous business
xii. Substitutes branch banking.

To Others

i. To concerns like airways/railways whose tickets are marketed and sold economically
ii. To electricity boards/telephone departments who improve their image by providing easy options for their bill payment
iii. To economy at large due to less circulation of cash.

8. Objectives Of The Study

- To examine the level of customer satisfaction associated with various aspects of ICICI Bank and SBI ATM.
- To analyze the present ATM facilities provided by SBI and ICICI Bank.
- To study the awareness and use age of ATM services.

9. Methodology

Sample Design

The sample size considered is 150. These respondents were asked questions by a questionnaire which includes their perception regarding their satisfaction level in the usage of the ATM's of the banks. The location of survey is Manipal- Karnataka.

Sources Of Information

The present study has made use made use of both primary as well as secondary data. This study depends on two kinds of data:
i. Primary data,
ii. Secondary data.

I. Primary Data

The data obtained from questionnaire and interaction with the customers of ICICI bank and SBI bank.

Secondary Data

The secondary data was collected through various newspapers, RBI monthly bulletins and magazines and websites related to the subject.

10. Research Analysis

The survey consists of a questionnaire provided to the customers to know their feedback on ATM services of ICICI and SBI bank.

Bank name

The reach of SBI bank is wider than ICICI bank because of the number of salaried and student account customers it holds, of Manipal University.

Therefore we received a larger number of SBI customers than ICICI bank customers.Table (i) depicts that 82 respondents are SBI customers and 68 are from ICICI bank.

Type of account (Table ii)

Majority of the respondents have a savings account with the SBI bank. This mainly includes salary account of Manipal University employees and student's account of the students of Manipal University. ICICI bank has a quite sufficient number of current account holders who operate ATMs.

Age group (Table iii)

Majority of the customers is aged below 25 years in SBI bank.

The numbers of respondents using ATMs are substantially high in the case of customers below 25 years. The tech savvy customers prefer ATM services rather than visiting the bank premises. There is a reduction in the ATM users after 35 years since the customers at that age criteria were those who have already been accustomed with the services at the bank's premises. Even though a large amount of respondents were below the age of 25 years, there is sufficient number of ATM users between 25- 35 years when compared to SBI bank.

Profession (Table iv)

The number of employee customers is more in ICICI bank than SBI bank. 31 customers of ICICI ATM are into business. SBI has a large number of customers who are students almost 40.

Income(Tablev)

Majority of SBI customers have zero income whereas a lot of ICICI bank customers have an income from 20000-50000

Are you satisfied with the clarity of bank statement? (Table vi)

Users of SBI ATM find clarity in the bank statement rather than users of ICICI bank. 67 SBI ATM customers feel that there is enough clarity in the bank statement but 35 ICICI ATM customers felt that there wasn't enough clarity.

Usage of ATM (Table vii)

Regarding the usage of ATM nearly 37% percent respondents utilize the ATM on a daily basis. There is large difference seen in the utilization of ATM on a weekly basis. SBI customers utilize ATM largely on a weekly basis than ICICI customers.

Instruction booklet provided with ATM card (Table viii)

Interestingly a large number of SBI customers have not received the instruction booklet with the ATM card. On the other hand a large number of ICICI bank customers have received the instruction booklet. Are you aware of the options rather than withdrawal provided by your Banking Bank's ATM?(Table ix)

A large number of ICICI customers are aware of the options available in the ATM other than just cash withdrawal, when compared with SBI customers.

If yes, have you ever tried to use the facilities other than cash withdrawal?(Table x)

Quite a number of ICICI bank customers are well aware of the options provided in ATMs other than cash withdrawal and have used them.

There is a reluctance seen among SBI customers in using other option of ATMs.

If No, What is the reason behind your reluctance?(Table xi)

Regarding reason behind not utilizing other facilities of ATMs than cash withdrawal, 34% of SBI customers find branch service better than the ATM service.26% of ICICI bank customers feel that the ATM doesn't provide them with sufficient information to carry out other transactions.

Customers also are also unaware of the services provided by their ATMs and are reluctant because they feel it's insecure.

In the next five years, do you think the payment mode at the point of sale will be fully in electronic form?(Table xii)

76% of respondents believe that the payment mode at the point of sale will be fully in electronic form in

the next 5years.

What are the positive features of ATM service of your banking bank?(Table xiii)
34% of customers find that SBI ATMs are easy to use than ICICI ATM.

A large number of respondents feel that the 24 hours service in 365 days is the best positive feature provided by both the bank's ATMs.

There is no difficulty regarding cash withdrawal in both the banks.

What are the uncomfortable features/issues of your banking bank's ATM?(Table xiv)
Comparatively ICICI bank's ATM has less negative features then SBI bank. The only contradiction is seen with the reasonability of fee charged by ICICI bank. Quite an amount of customers feel that ICICI bank charges them a high fee in using ATMs.

What are your recommendations to improve your banking bank's ATM services?(Table xv)
A whooping amount of ICICI customers find that currency quality provided to them is better.

Interestingly the respondents have provided a number of recommendations to SBI ATMs regarding new ATM locations, facility to pay utility bills, increase in safety and security and enhancement of withdrawal limits.

Table i: Bank name

Bank Name	*Respondents*
ICICI bank	68
SBI	82

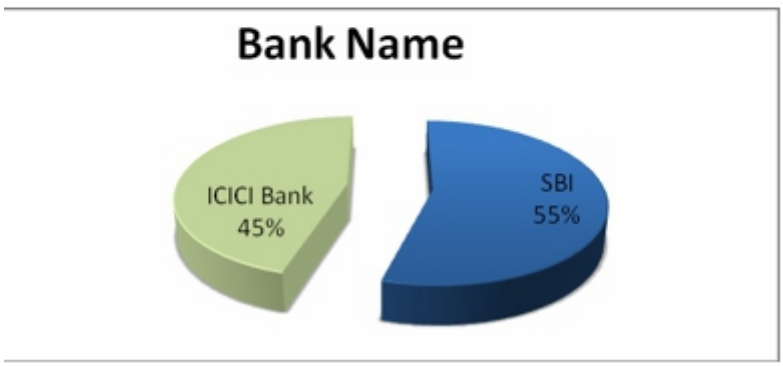


Table ii: Type of account

Type Of account	*SBI*	*ICICI bank*
Savings account	73	48
Current Account	7	20

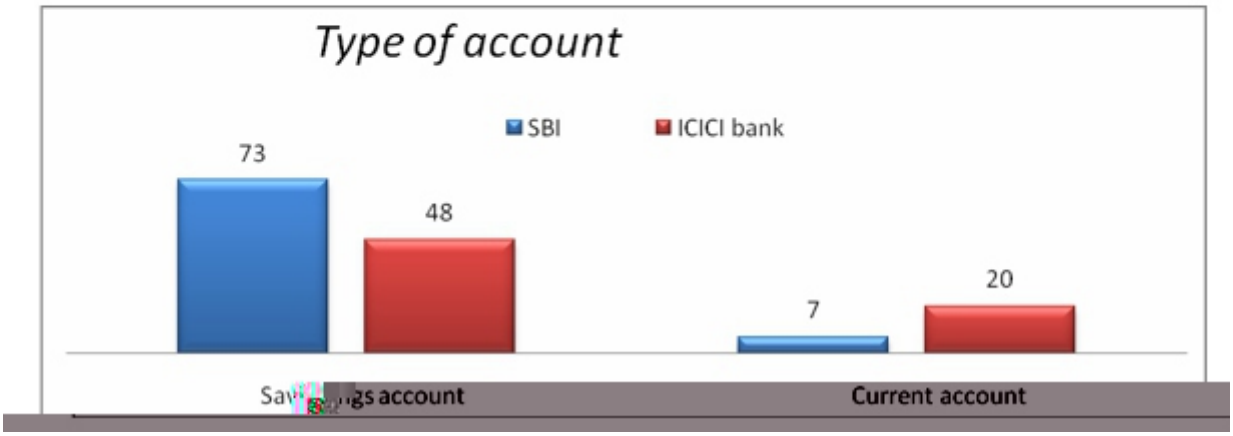


Table iii: Age group

Age group	*SBI*	*ICICI bank*
Below 25	38	30
25-35	29	23
35-45	13	12
45 and above	2	3

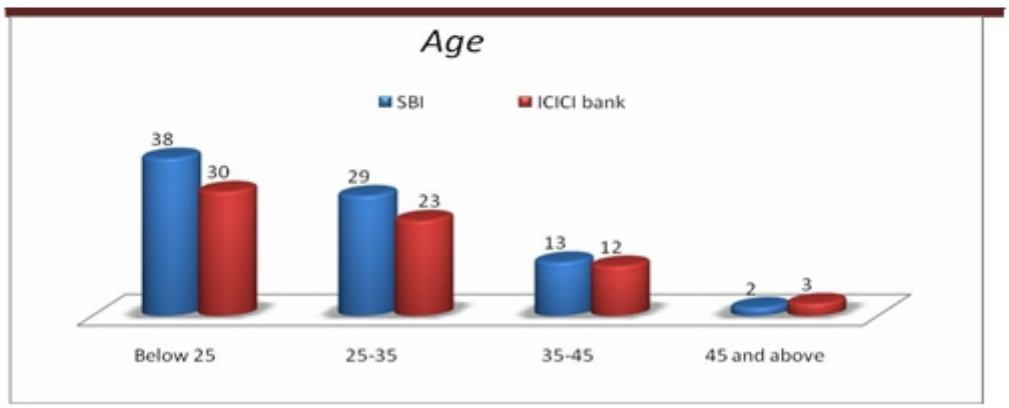


Table iv: Profession

Profession	*SBI*	*ICICI bank*
Student	40	15
Employee	34	31
Businessman	5	20
house wife	3	2

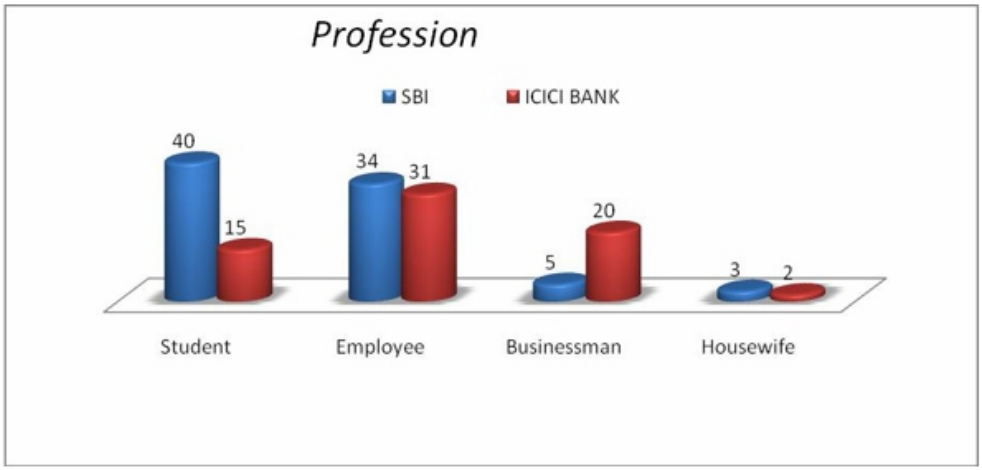


Table v: Income

Income	*SBI*	*ICICI Bank*
Below 20000	16	18
20000-50000	17	34
50000 and above	10	8
None	39	8

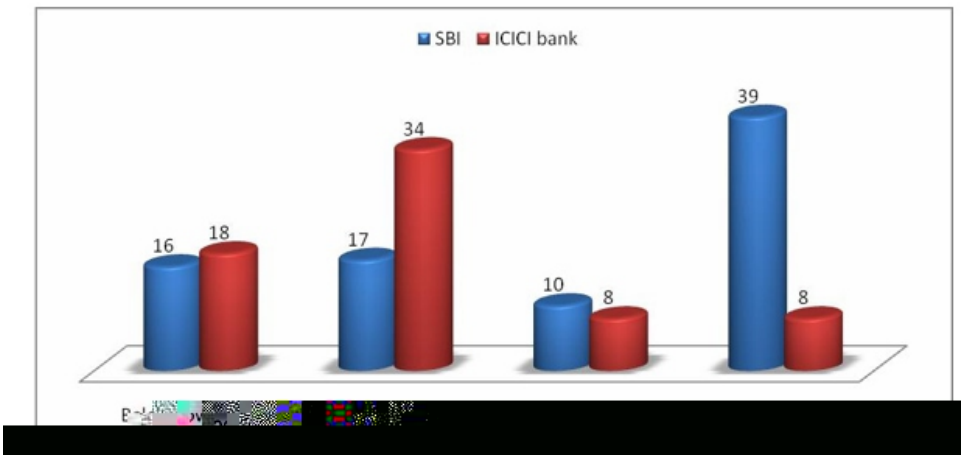


Table vi: Are you satisfied with the clarity of bank statement?

Response	*SBI*	*ICICI Bank*
Yes	67	33
No	15	35

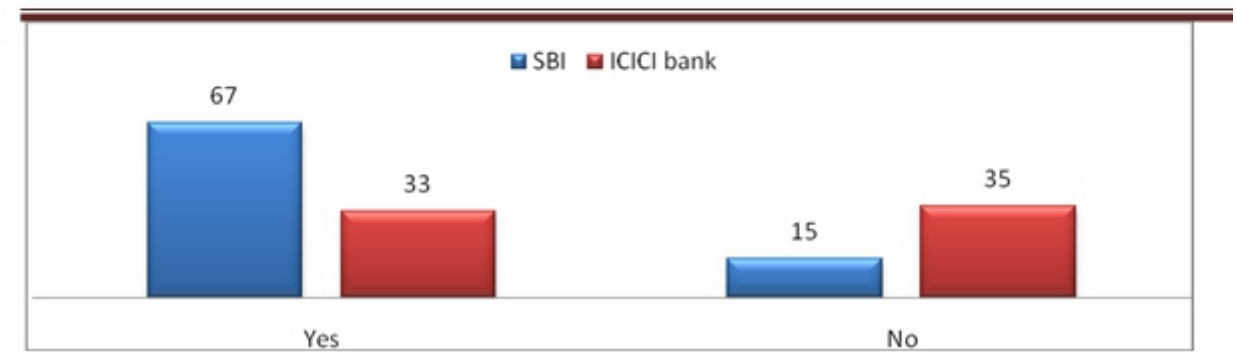


Table vii: Usage of ATM

Usage of ATM	*SBI*	*ICICI bank*
Daily	12	20
Weekly	36	6
Monthly	7	13
Anytime	27	29

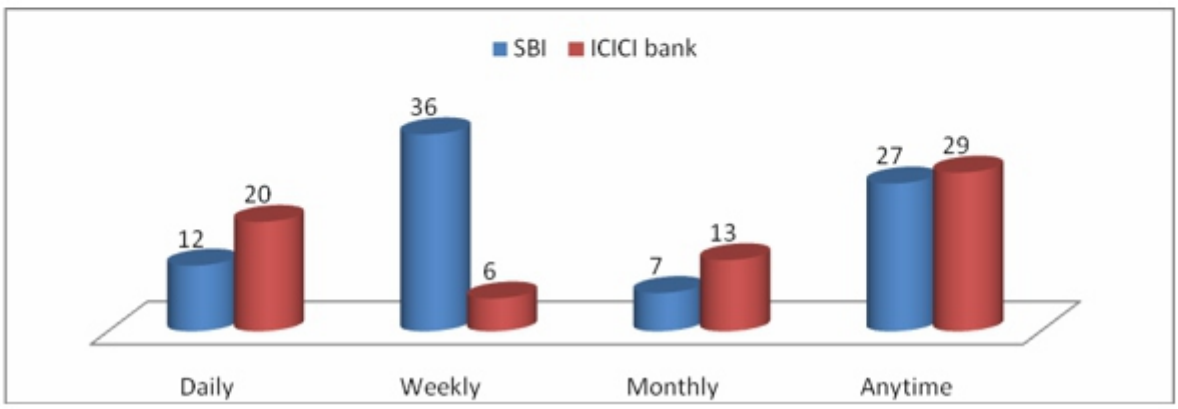


Table viii: Is Instruction booklet provided with ATM card?

Bank	*Yes*	*No*
SBI bank	40	42
ICICI bank	43	25

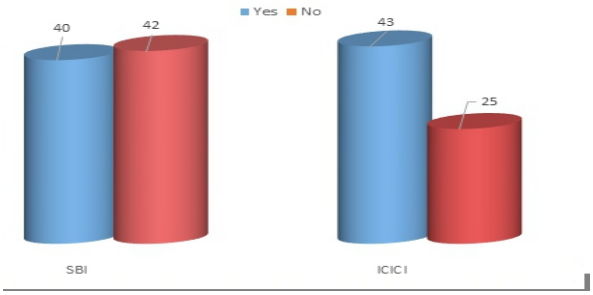
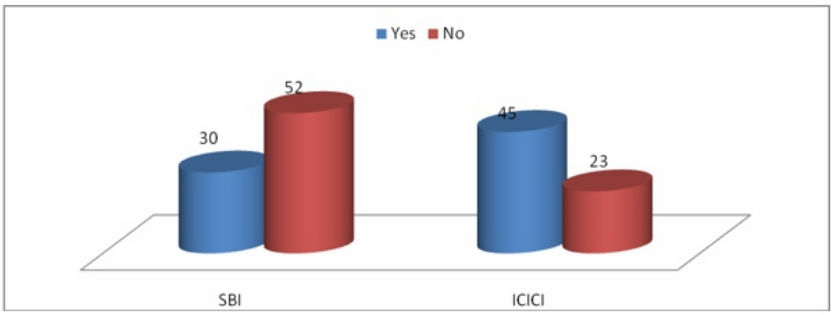


Table ix: Are you aware of the options rather than withdrawal provided by your Banking Bank's ATM?

Bank	*Yes*	*No*
SBI bank	30	52
ICICI bank	45	23



A large number of ICICI customers are aware of the options available in the ATM other than just cash withdrawal, when compared with SBI customers.

Table x: If yes, have you ever tried to use the facilities other than cash withdrawal?

Bank	*Yes*	*No*
SBI bank	24	58
ICICI bank	41	23

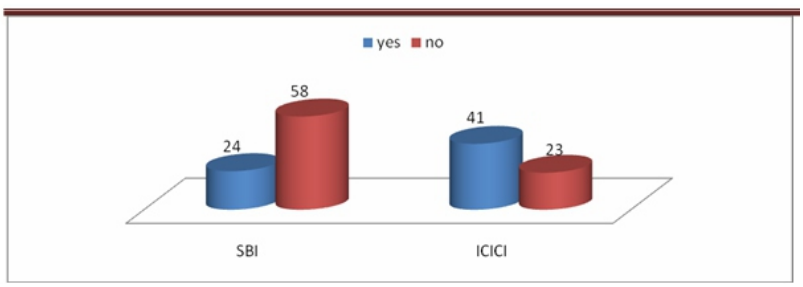


Table xi: If No, What is the reason behind your reluctance?

Reasons	*SBI*	*ICICI bank*
it is cumbersome	12	13
you don't like it	14	11
branch service is better	28	15
it can't provide me required information	17	18
it is time consuming	8	5
other	3	6

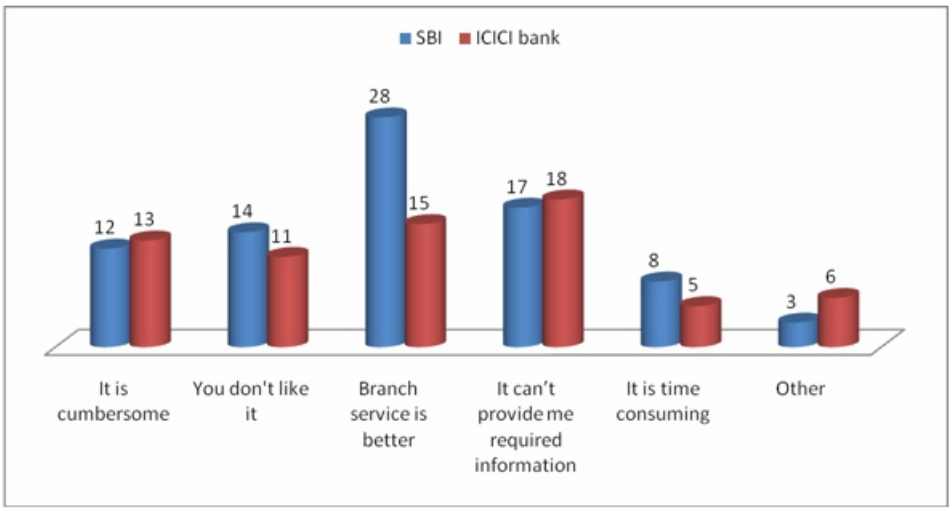


Table xii: In the next five years, do you think the payment mode at the point of sale will be fully in electronic form?

Bank	*Yes*	*No*
SBI bank	63	19
ICICI bank	52	16

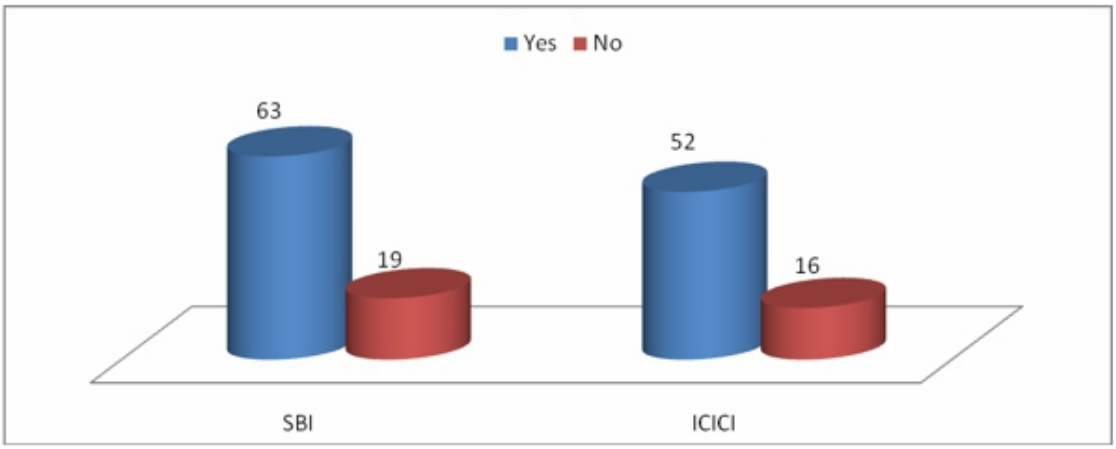


Table xiii: What are the positive features of ATM service of your banking bank?

Positive features	*SBI*	*ICICI*
Easy to use	12	8
Satisfied with the service quality of ATM	6	3
Saving the Time	11	10
24 hour service in 365 days	14	13
Off-shore ATM	3	4
Cash withdrawal	10	10
Cash deposit	2	1
Transfer of funds	6	7
Statement request	9	10
PIN change	3	2
Enquiry	3	3
Safety-security	2	2
Others	1	2

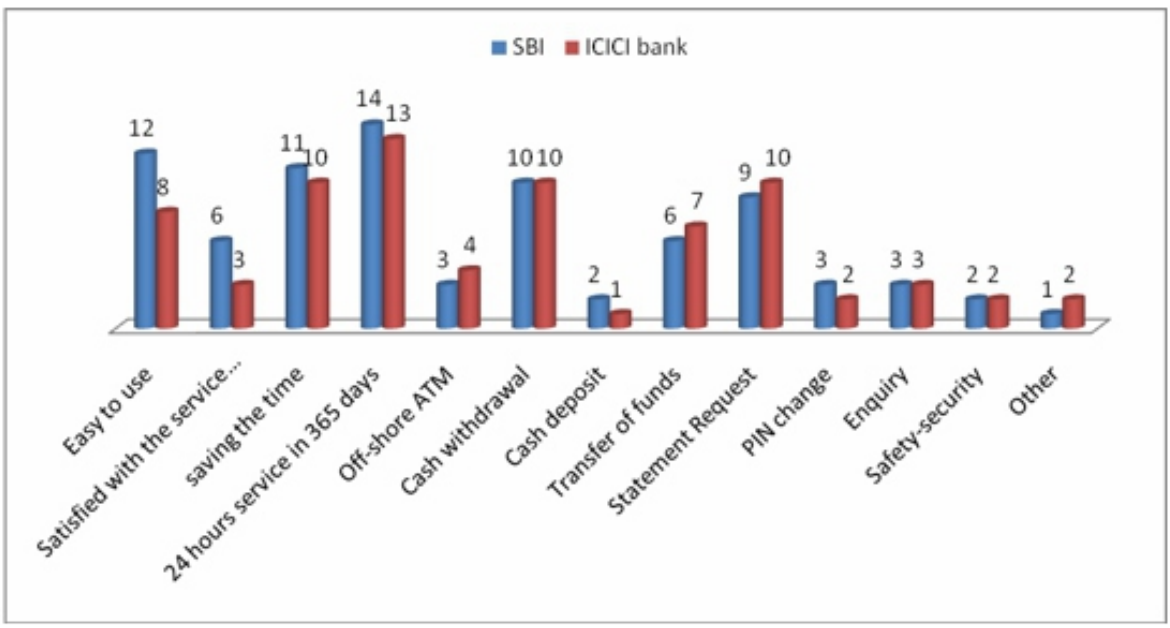


Table xiv: What are the uncomfortable features/issues of your banking bank's ATM?

Negative features	*SBI*	*ICICI bank*
Soiled notes	11	8
Absorbed Card	8	5
No privacy	6	3
Machine complexity	7	6
Machine breakdown	18	11
Unsuitable location	8	6
Unsecured	3	2
Old fashioned & untidy	13	10
Lack of ATM centers	6	8
Reasonability of fee charge	1	5
Others	1	4

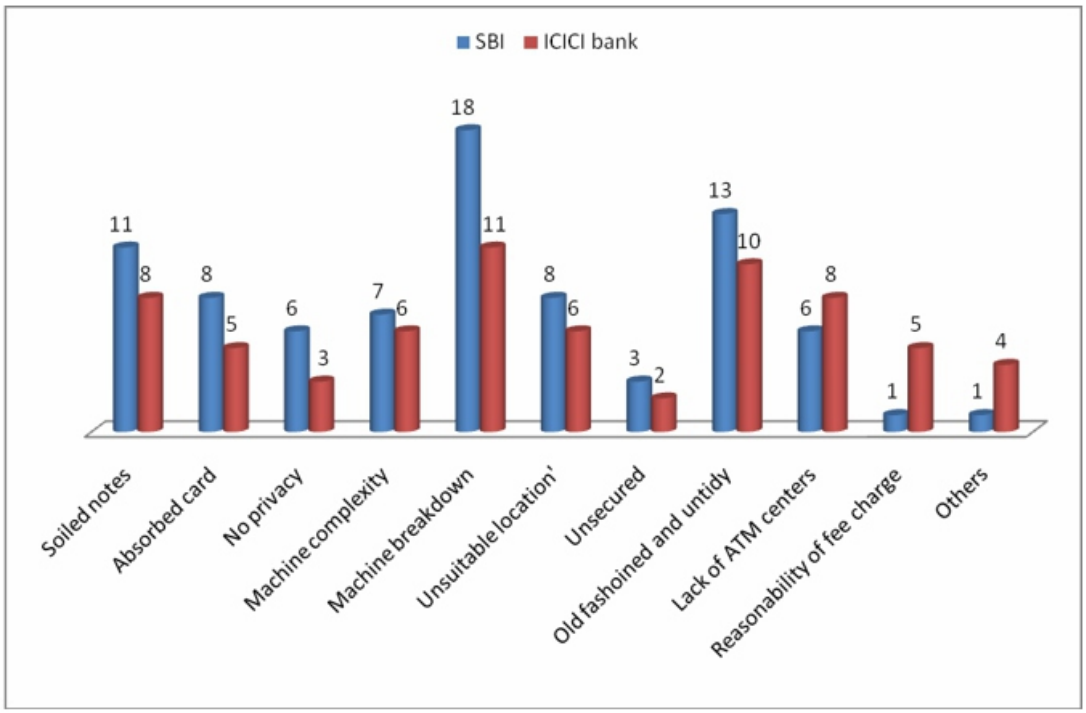
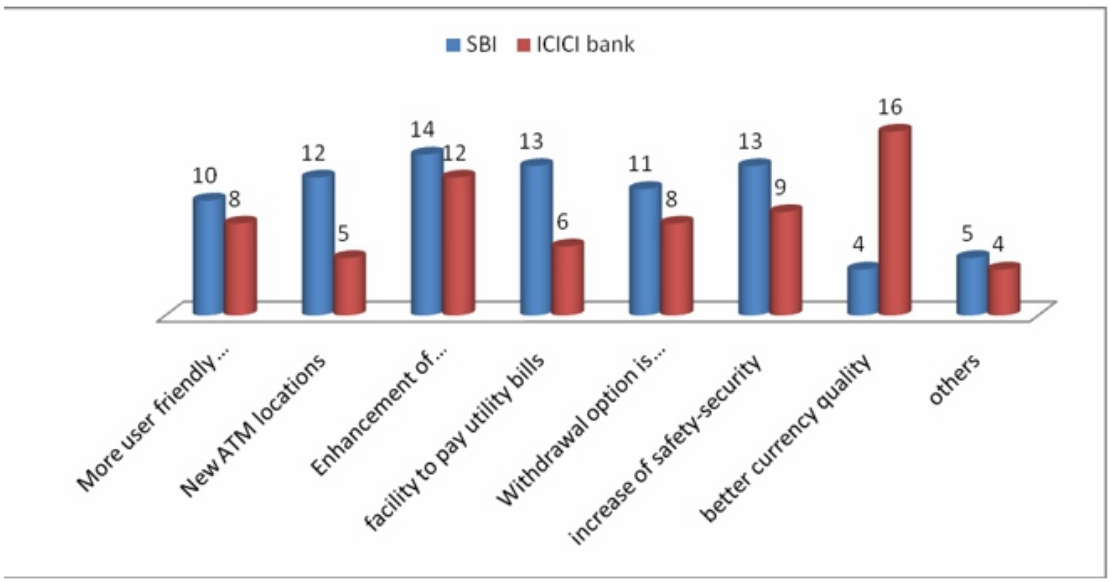


Table xv: What are your recommendations to improve your banking bank's ATM services?

Recommendations	*SBI*	*ICICI bank*
More user friendly machine.	10	8
New ATM locations.	12	5
Enhancement of withdrawal limits.	14	12
Facility to pay utility bills.	13	6
Withdrawal option is loaded in the multiples of Five Hundred.	11	8
Increase of safety- security.	13	9
Better currency quality.	4	16
Others	5	4



Suggestions

ATMs have become a way of life and the banks which do not offer ATM services are by and large, not regarded favorable by the customer. There was a time when banking meant waiting in long queues during working hours on weekdays just to get a passbook updated or get the 'busy' bank staff to answer your queries.

The need to provide personalized, speedy and cost effective services is pushing banks to further reorient and innovate the business model of banking and enabling technology. It has become inevitable and is seen as the only way for banks to survive in the increasingly competitive banking arena. Technology not only simplifies the banking process and service channels but also plays a holistic role in enabling

financial inclusion. However, some bankers are of the opinion that unless the financial inclusion is supported in some form by the government it will not be a viable initiative. Many Indian banks have embarked on the journey of technology revolution and are at varying degrees of success. This is due to the fact that not all of them have understood diversity of their customer base and their varying needs. As one senior banker put forward bankers need to understand customer needs in rural India as well as Gen Y and develop products and services focused on their needs.Regarding the ATMs, scope for reducing environmental impact is further possible, a key focus area for responsible banks in reducing their carbon footprint.

The ATMs can be made greener by the following means:

- Give customers the option of printing a receipt. While printed receipts can be a very important part of the transaction for some customers – not all customers want or interested in receipts.
- Alternatively, two-sided thermal printing (which prints on the front and back of the paper), can be thought of so that paper is used efficiently and cut total paper volumes.
- Increasingly, consumers are open to receiving a text message or email as a form of receipt.
- Install more solar-powered ATMs, with banks and financial institutions gaining significant benefits from this innovative solution.

The environmental impacts of ATMs, specifically focuses on the potential environmental effects regarding the material intensity throughout the life-cycle with respect to material flows & transport intensity, Raw Materials etc. The energy sources include monthly account statement, transport to/storage at Central Clearing House, Intake and processing of credit slip, filling out credit slip, Transport/Transmission of credit slip, its production & supply etc.

The material intensities of aspects that are not central to the scenarios such as, the production of vehicles, the transport infrastructure etc. will also have impact on environment. Building infrastructure can contribute a considerable degree to the overall material intensity including consumption of electricity, gas and water etc. and thus among other things, the energy consumed will be less overall. In usage of ATMs, the material intensity would be reduced significantly. In general one can say that the means of transportation by the consumer is also a saving to environment, including avoiding of parking lots next to the bank or traffic jams on the roads etc.

In a dynamic and growing economy, such simple savings are great advantages towards environment, when the productivity of a resource is improved; resources are freed for other uses. This is the essence of the rebound effect of online banking, the comfort of being able to do the banking from anywhere,

anytime without the need to visit a branch. So the main efficiency gain is time saving and perhaps saving trips. Even time wise, the savings are notable.

Conclusion

The observation in the survey depicts that banks should take up various measures to educate customers on the usage of ATMs. Quite a large number of both the bank's ATMs are unaware of the various facilities provided by the ATMs other than just cash withdrawal and balance statement. They should be made aware of the facilities like transfer of funds, biller payments, mobile recharge, donating to charity etc. so that the customers can make better use of the ATMs by deriving all its benefits.

When comparing ATM and branch service, customers feel that SBI branch service is better than its ATM service. Whereas, ICICI customers find both of the services viable. It signifies that customers are reluctant to use ATMs and would prefer branch service.Having the largest ATM network in India can be an enviable position. But, for the country's largest bank, SBI that seems to be hardly the case. For, SBI customers prefer its competitor bank's ATMs.Customers prefer more user friendly machines, ATMs at new locations, enhancement of withdrawal limits, withdrawal limits to be loaded in multiples of 100s and ATM safety and security. This being the case of SBI ATMs.

Sustainable development is largely about making links between disparate factors. There are some real tasks associated with online banking: digital inclusion and technological literacy are still major problems in Indian society and, must continue to be a priority issue for banks as they should be taking a major initiative. Change is inevitable in the modern banking environment, the successful banks will be those who can adapt the older channels to bring benefits to the newer ones and yet maintain the trust of the customers.

If the banks are to reap the social sustainability benefits of online banking to the full, they need to continue to search for innovative and efficient ways to integrate their CSR work into all areas of business, linking the opportunities available for training, inclusion and trust building. Seeking a socially sustainable solution to online banking, moreover, can be seen, by and large as more of an real opportunity than it is at present, offering win-win outcomes for business and society. ATMs are a transitional phenomenon, on a long-term strategy; the banks are going to reduce their building infrastructure in the long run, either by closing branches or reducing branch sizes. It is sure and certain that ATMs will contribute to a decoupling of economic & environmental growth. However it can be confidently stated that technological developments have played a crucial role across the society, giving benefits, best made available to the whole of society for its mutual benefit between banking and society.

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