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Journal of Information Sciences and Application

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Disruptive Technologies pushed (->) Teaching Engineering is “On the Edge of the Crevasse” - Challenges and Solutions

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ABSTRACT

As coined by the book “The Innovative University: Changing the DNA of Higher Education from the Inside Out” by the godfather of this term “innovative disruption” or disruptive technologies, Clayton M. Christensen; it is very much required for us, especially the academicians, to develop more excellent higher education, primarily affordable and thus more accessible for many more people for enhanced welfares. Disruptive technologies, offers or better can be said compels us, to revisit how engineering students, technical students are being nurtured and in turn their future. Disruptive technologies positively allow us to perform it in a manner which may be even better as compared to what is being given these days. Therefore it can be said that now it's our turn to figure it appropriately. Largely, technical & management colleges and/or universities are performing well financially, therefore it is not being felt for their statistics that this domain is going to shrunken. On a broader level it is expected that these ventures are going to be in trouble, more or less within five years or so from now Education is staying at a stable mode where it was established centuries ago. The prime of the challenges is the growing availability of online learning. This and others are discussed further. One of the solutions may be the evolution of hybrid models, in which such ventures license some courses from an online provider or so as revealed further in this paper.

Keywords : *innovative disruption , disruptive technology, innovation, learning environment system, E-learning.*

INTRODUCTION

Professor of Harvard Business School, Clayton Christensen - the father of this notion of "disruption" was asked in an interview that which industries are being disrupted right now, or will soon be in a state of disruptive crisis. He responded [10], "I think higher education is just on the edge of the crevasse. Generally, universities are doing very well financially, so they don't feel from the data that their world is going to collapse. But I think even five years from now these enterprises are going to be in real trouble . "... “The reason is the increasing availability online learning. It's going to follow Christensen's classic examples of disruption. Mini mills killed off big steel companies by making low quality, low margin

rebar, then working their way up to eat their entire business. The same process is starting to happen in higher education.” ... “*Disruption is coming for higher education. Even the best universities are going to have to change rapidly. Otherwise, they're going to be overtaken more rapidly than can imagine.*”

The enhancement of higher education's productivity is the prime requisite not only to strengthen the nation but also to properly station it, in the current progressively universal marketplace. Without adequately growing enrollment of students, their access and attainment in the universities and/or colleges offering courses in higher education institutions; system becomes decaying continuously, resulting less competitive, and fading to tap the full potential. The higher education providing bodies i.e. such universities, colleges, institutes must be open to the operation of cutting-edge schemes to improve the productivity. This will achieve the target of escalating capacity, advancing teaching and learning, and improved operating for growing student population of students.

Disruptive Technologies: the scenario of disruptive innovation

A disruptive innovation alleviates the creation of a fresh additional marketplace which disrupts the present business and ventures. While introducing the iPod, its firm presented together a sound technology with a revolutionary business paradigm. This can be quoted as a perfect instance disruptive innovation. Buyers clustered to Apple which resulted in the record-breaking benefits with its services, software, hardware etc. Here the actual innovation was making easily availability of downloading the music. This digital music promotion pushed a paradigm in the business which was combined with the services, software, hardware etc. with short-margin returning music delivery with and large-margin returning iPod.

Disruptive technology is enhancing higher education in e-learning.

Whether or not this statement is true, it contains several subqueries and directions. Direction and query for finding the existing answers and applications for e-learning in higher education, same for knowing the disruptive technology and its meaning in successful employment of a disruptive innovation in higher education; and for acquiring the key terms for defining innovation in higher education in terms of disruptive technology.

Education is continuing at a steady manner where it was founded times ago. The protocols of teaching in a classroom is to aid students who are decelerate at their steps to catch up with teammates. The prime concern is, what can be done for the candidates/scholars who are already quick at learning?

Innovation positions the impact on learning and teaching. It may leave scope for the confusion about the competence of deploying technological applications into learning and teaching. The recent model of the same is online model where people study from various digital alternatives, applying several online services to acquire knowledge, and the teaching is not constrained in classrooms.

Categories of Disruptive technological Innovations

There may be following kinds of disruptive technological innovations

- ❖ *Creating fresh marketplace for Disruptive technological Innovations:* This encompasses alternatives that are much more inexpensive to own and easier to occupy/ learn-teach or utilize — they permit a new crowd to own and make use of services. The mobiles / laptops / PCs also knocked into a non-prevailing market.
- ❖ *Short-edge Disruptive technological Innovations:* This encompasses a fresh operating cum financial approach with certain fusion of lower benefits margins and higher asset application. Lucrative profits are achievable at the lowered prices on discount needed to triumph the business at the low end of the market. Rather than generating new markets, corporations use low-cost business paradigm that pick off the least attractive customers of well-known universities/ colleges / institutes / corporations. Amazon disruption on traditional bookstores can be quoted as the best example for this.
- ❖ *Hybrid model of Disruptive technological Innovations:* This encompasses the combination of above two models. *Higher education providing universities/ colleges / institutes can go for some other alternatives like the online one in parallel to their traditional courses.*

Approach for Disruption

Enhancing, teaching and learning from traditional way of classroom scheme is essential through the combination of technology more specific, disruptive technology. The solution may be the integration of contact classes with virtual teaching and learning phases. While doing this advancement of knowledge the prime concern is the reliability of assessing stuff of teaching & learning; and conversion of the same into proper modes that efficiently integrate internet technologies with it. This serves the means of spreading out the knowledge without boundaries.

In higher education, the approachability of open content may have a massive effect on structuring a learning organization. Concentrating on the bulged importance of technology applications employed for knowledge retrieval results in offering a platform for sharing the content for the purpose of social and economic well-being also. Sharing is the fundamental attribute of education which enables thoughts & visions, knowledge, and informational content to be put open with others. Even if the understanding is not predicted, sharing is considered unlimited. Therefore the openness in education does not signify free access rather it denotes open content and educational resources, in turn the open opportunities. The following diagram demonstrates one way of achieving this purpose.



The diagram demonstrates the direction within three phases of components. The first is the setting the vision and conceptualizing the course. Further, the prime activities that the course holds are there. It composes of delivering, collaboration of relevant mechanisms, considering assessment policies. With the combination of these initial phases the final result is to put them in a way to produce a successful implementation. There are numerous means of enhancing one's learning and studies, the possibilities for picking best suitable one is being offered

Current Scenario

Higher education providing technical & management colleges and/or universities currently facing competition from institutions with similar operating approaches. Now, however, there are disruptive for-profit entrants offering online degrees. Conventional higher education providing technical & management colleges and/or universities have treasured qualities and capacities that can offset those disruptors' advantages. Therefore, they must consider about productive and creative response from them towards scholars.

Conclusion

Disruptive technologies, which generate new markets and displace present ones, are better opportunities being utilized in higher education. Technical& management colleges and/or universities

should evolve hybrid approaches, in which they license some courses from an online provider thus more-specialized courses in person. Hybrids are a paradigm irrespective of industry, in reality. If they wish to use a new technology in a mainstream current market, it must be a hybrid one. The proper selection of learning which may include online learning will result in a relatively healthy economy and flexible regulatory environment, therefore supporting and serving the nation through education.

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Consumer's Perception On Online Procedure For E-Filing

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ABSTRACT

*In the present world, new technologies are introduced in all fields. In this scenario it is e-filing for tax payer for filing their Income Tax Returns through internet. The present study is an empirical study about the **consumer's perception on online procedure for e-filing**. It can provide a strong support to the government for good governance and large population to pay their liabilities to the government effectively. The advancement of technology and use of internet in financial and fiscal affairs globally has necessitated the e-filing of Income Tax in India also. The study is based on both primary and secondary data collection with the help of structured questionnaire being filled by 200 tax payers which were purposively and conveniently chosen from individuals, partnerships, business firms and HUF. Descriptive statistics and factor analysis has been used to analyses the awareness, satisfaction level and the problems of the respondents. The data has been collected on the basis of recently implemented GST. The results suggested that although E-filing has given ease of use to the income of tax payers yet they are facing various problems like peak rush, difficulties in operations in this process. The paper concludes that the key challenge ahead is regarding system security and mass awareness, which is needed to make e-filing more successful.*

KEYWORDS Tax return, income tax, e-filing, GST, online

INTRODUCTION

Income tax generally is computed as the product of a tax rate times taxable income. The tax rate may increase as taxable income increases (referred to as graduated or progressive rates). Taxation rates may vary by type or characteristics of the taxpayer. Capital gains may be taxed at different rates than other income. Credits of various sorts may be allowed that reduce tax. Some jurisdictions impose the higher of an income tax or a tax on an alternative base or measure of income.

Generally, only net gain from sale of property, including goods held for sale, is included in income. Deductions include all income producing or business expenses including an allowance for recovery of costs of business assets.

For simpler classification, the Income Tax Department breaks down income into five heads:

Income from Salary	Income from salary and pension are covered under here
Income from House Property	This is rental income mostly
Income from Capital Gains	Income from sale of a capital asset such as mutual funds, shares, house property, agricultural land
Income from Business and Profession	This is when you are self-employed, work as a freelancer or contractor, or you run a business.
Income from Other Sources	Income from savings bank account interest, fixed deposits, winning KBC

TAX SLAB

Income Tax Slab	General Category	Senior citizen between 60-80 years of age.	Senior citizen between above 80 years of age.
Upto Rs2,50,000	NIL	NIL	NIL
Rs 2,50,001 to 3,00,000	5%	NIL	NIL
Rs 3,00,001 to 5,00,000		5%	5%
Rs 5,00,001 to 10,00,000	10%	10%	10%
Above 10,00,000	20%	20%	20%
Surcharge: ** 10% of income tax, where total income is between Rs. 50 lakhs and Rs.1 crore. ** 15% of income tax, where total income exceeds Rs. 1 crore.			
Cess: 3% on total of income tax + surcharge.			

ONLINE FILING

To file your return online you must follow the given steps:

1. Go to www.incometaxindiaefiling.gov.in
2. Register your PAN if not already registered. Fill all the details in registration process and give your email id.
3. After completion of registration a link will be sent to your email to activate the account.
4. Open your mail and click the link to activate your account.
5. Download ITR 1 form the same site in excel format.
6. Fill in the ITR completely by referring to your Form 16.

7. Once all details are filled click on 'Calculate Tax' button on the first page of the ITR to see that the tax has been correctly deducted and deposited as mentioned in Form 16. Tax deducted in Form 16 will match in case there is no other income or mistake in filling the details.
8. Validate each page of the ITR as this will point out if any mistake is there.
9. Once done, click on 'Generate xml' button on the first page of ITR to create an xml file of the return.
10. Save the '.xml' file on your computer.
11. Now again go to the Income Tax site and login with your PAN number registered.
12. Click on upload return and select the correct assessment year i.e. 2013-14.
13. Now upload the xml and you are done.
14. You will get a message where an acknowledgement copy of ITR filed will be sent to your mail and also a download link will be shown for you to download the same immediately.
15. Open this acknowledgement and take two copies. Sign one copy and send it the address given at the end of this acknowledgement.
16. Once your acknowledgement reaches the address and is processed you will receive a mail conforming the filing and processing of your ITR.

LITERATURE REVIEW

[1] Geetha et al (2012) in their study focused about the perceptions of e-filing of income tax return and concluded that awareness towards e-filing of income tax returns is required.

[2] Mamta (2012) investigated whether the tax payers had encountered any problem in using the e-filing system and concluded it's easy to file return online as majority of the tax payers own enough facility to use e-Filing system

[3] Chawla et al (2013) conducted a study to check the satisfaction level and awareness of the tax payers toward e-filing of income tax returns.

[4] Kumar et al (2014) discussed about the benefits of electronic filing of tax to the policy makers, tax payers, e-filing intermediaries, financial software engineers and academicians.

[5] Barati, Shokrinia, Najaf & Safar (2015): The main objective of the study is to judge the implantation of electronic tax obstacles. The result showed that lack of technical knowledge, infrastructure and expectation of effort and efficiency have a lot of influence on the factors poignant the acceptance of e-taxation system.

RESEARCH METHODOLOGY

The purpose of this paper is to study the process and benefits of e-filing Income Tax Returns. The objective is to investigate the consumer's perception on the online system of filing income tax. The type of research design followed is exploratory cum descriptive in nature. The primary data has been collected through a highly structured questionnaire. The questionnaire consisted of multiple choice questions as well as ranking questions. The total no of people surveyed were 200 and their preferences has been collected and analyzed. Secondary data has also been taken from various sources on internet. We have used systematic and convenience sampling methods for analyzing consumer's perception on online procedure for e-filing.

The data source is based on primary and secondary data. Basically, the primary data information has been gathered from the questionnaire. The secondary data has been collected from the internet i.e. the income tax website. The age group that we have considered is ranging between 18-25, 26-36, 37-50, 50 and above.

Around 45.6% of people are satisfied with the e-filing procedure on the income tax website. Nearly 50% i.e. 45.3% of people are satisfied with the safety while e-filing. Only 36.4% of people are satisfied with the acknowledgement created by e-filing systems. - Around 34.5% of people feel that the online procedure of e-filing is easy. Around 37.4% of people feel it neither takes too much time nor takes less time for e-filing. While 27.5% are satisfied with the time limit given for e-filing. Only 36.3% of people are satisfied with the easy of receiving income tax refund. Around 27.5% are satisfied with the status tracking procedures. While on the other hand, same percentage of people are neutral about this i.e. they neither feel it's easy nor feels it's difficult. Only 32.6% feel banks help in e-filing process and 14.1% are

still dissatisfied with their services. 37.9% of people are satisfied with the accuracy rate while e-filing. While 34.5% of people are neutral regarding the accuracy rate. Only 30% of people are satisfied with the e-payment procedure of income tax. While 37.6% are neutral i.e. neither feel it's good nor feel it's bad.

DATA ANALYSIS AND INTERPRETATION

Sr. No	Level of satisfaction on the following parameters?	highly satisfied	satisfied	neutral	dissatisfied	highly dissatisfied
a)	Level of satisfaction regarding e-filing procedure on the website.	13.30%	45.60%	30.00%	3.30%	7.80%
b)	Level of satisfaction regarding safety of e-filing.	11.60%	45.30%	27.40%	5.20%	10.50%
c)	Level of satisfaction regarding acknowledgement created by e-filing system.	14.80%	36.40%	35.20%	10.20%	3.40%
d)	Level of satisfaction regarding easiness of e-filing.	24.10%	34.50%	27.60%	8.00%	5.80%
e)	Level of satisfaction regarding time limit given for e-filing.	16.50%	27.50%	37.40%	8.80%	9.80%
f)	Level of satisfaction regarding ease of receiving income tax refund.	18.70%	36.30%	27.40%	9.90%	7.70%
g)	Level of satisfaction regarding status tracking.	28.60%	27.50%	27.50%	12.10%	4.30%
h)	Level of satisfaction regarding services through bank for e-filing.	21.70%	32.60%	26.10%	14.10%	5.50%
i)	Level of satisfaction regarding accuracy of e-filing.	17.20%	37.90%	34.50%	3.30%	7.10%
j)	Level of satisfaction regarding e-payment of income tax.	20.40%	30.10%	37.60%	8.30%	3.60%

FINDINGS AND CONCLUSIONS

Previous researchers have highlighted the importance of perceived risk to the adoption of e-filing. This research attempts to provide insights into its facets, thus, providing useful input on the adoption and evaluation of the e-filing system by users. Among the risks that could possibly be significant are performance risk, psychological risk, time risk and privacy risk. Around 34% of people are unhappy with the unsuccessful attempts while filling tax return and 28.7% of people do not file due to security concerns. Past studies have also shown that taxpayers tend to e-file near the tax deadline and this may lead to system crashes. This is because 20.2% people do not trust the process of e-filing or are unaware of the procedure to file for tax return online. Only 36.4% of the people are satisfied with the acknowledgement created by e-filing systems. Privacy risk could possibly be a major risk for adoption of e-filing; this is because e-filing involves the transmission of taxpayers' confidential details and information through the web. 87% of people file for tax return as an individual. The percentages of people who file tax return as partnership, company or HUF are comparatively less. Different types of

taxpayers such as companies may deal with more complex transactions than individual taxpayers. Main challenge is risk of security. The three main aspects of security include: confidentiality, integrity and availability. Only 45.3% of people are satisfied with the safety measures regarding e-filing. Moreover, around 32.6% of people are satisfied with the services provided by the bank for online procedure for e-filing.

SUGGESTIONS AND RECOMMENDATION

According to this survey that the income taxpayers demands the website more eco-friendly that means when the taxpayers operates the website then the websites gives the steps for filing the returns if these changes develop then the income taxpayers don't depend on others for electronic filing. 3. For the betterment of the website the government must focus on the website server that the website properly works in the peak months and use more advance technology.

Risk reducing strategies could be formulated to encourage e-filing adoption such as improved security features for the user interface. It could be developed to cater to the facets of risk that are the most prevalent in e-filing adoption. For example, if psychological risk is a significant factor, the tax authorities could develop several methods of helping taxpayers e-file such as an offering a web-based tutorial or a video that guides the taxpayers throughout the e-filing process.

Second, this research could identify the demographic characteristics of those with higher or lower inherent e-filing usage risk. By identifying these, different advertising strategies could be targeted to a specific group of people. This research could also be expanded to include different types of respondents such as paid tax preparers and different types of taxpayers. Different types of taxpayers such as companies may deal with more complex transactions than individual taxpayers, thus, they may emphasize different risk facets when filing in the tax return form electronically. Financial institution, tax department and government should also create more awareness towards e-filing. Also knowledge about advantage and convenience of e-filing should be given to those who do not have any motivation towards e-filing.

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Analysis of Digital HRM's role on value enhancement of HR functions

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ABSTRACT

The exponential growth in the information technology with time has challenged the traditional ways of HRM services in the organizations which laid the foundation for 'Digital HRM'. Digital HRM implements the integration of HRM processes and IT to create a strong impact on value enhancement of HR functions.

This paper discusses the continuous evolution of the definition of 'Digital HRM' by various researchers based on evolution of its scope with time. The employment of information technology to simple HR functions such as payroll processing in the 1980s was extended to strategic functions like services related to talent acquisition, performance and compensation management in around 2006. Digital HRM today generates career planning tools for competence management and covers all possible integration mechanisms and contents between HRM and Information Technologies aiming at creating value within and across organizations for targeted employees and management.

The paper analyses the strategic benefits of digital HRM as increase in effectiveness and efficiency of HR practices, thus empowering organizational decision making and knowledge management.

The paper concludes that digital HRM supports the HR functions to become more efficient thus improving the service delivery and the firm's business strategy to achieve competitive advantage.

Keywords: Digital HRM, Value enhancement, Competence Management, Decision-Making, Knowledge Management.

1. INTRODUCTION :

The human resource management in the organizations has gone through dramatic changes with time. HR activities are now delivered by specialized HR professional and by new technologies including outsourcing. The objective of this research study is to analyze role of digital technologies on enhancement in the value of HR functions.

The challenge of reducing HR costs and administrative burdens drives to seek the application of digitalization to HR. The digital technology has enabled automatic functioning of HR processes. The goal is to improve productivity and reduce operational cost.

Internationally HRM needs to become a strategic partner to add value to the real business rather than to manage employees of the organization. As a result academic interest in digital HRM has increased with time.

Exponential growth in information technology has been challenging traditional ways of HRM services within organizations. The role of digital technology in HR function has changed from managing administration to strategic roles.

The organizations around the world have started using digital HRM and are ready to invest more. Today digital HRM is no longer stand-alone tool but a part of complicated ERP systems and is integrated with various modules such as financial module. In the last few decades researchers have been interested in the digital HRM field. Since there is paucity of research in this field, therefore it is needed to investigate the increase in the value of HR functions due to digital HRM and to which extent various factors affect its adoption.

The aim of present study is to explore the effect of digital HRM on value enhancement in the HR functions and to investigate influencing factors of its adoption. This study begins with evolution of various definitions for digital HRM to analyze its scope and a literature review of importance of digital HRM. There is analysis based on various research studies to estimate effect of digital HRM on value increment of various HR processes. Various factors influencing the adoption of digital HRM are investigated which are divided into three categories.

2. LITERATURE REVIEW

2.1 The history of Digital HRM

The use of digital technology in HRM began in the 1940s. The technology supported storage of information of employees and their payroll systems. Federal tax came into practice in America by 1943 and set clerks struggling with manual processes causing human errors. The need to increase the efficiency of the auditing department led to automation in payroll systems. Technology thus reduced the burden of HR staff.

Revolution of computers happened in four stages. First stage is based in 1940s. Second stage cover the mid-1950s and early 1960s. Third stage brings personnel data into management information system. Fourth stage made personnel data systems a necessity due to government requirements in the 1970s. Various companies started using in 1980s and derived benefits from IT application and applied digitalization to finance and accounting to automate these processes.

By that time the term HRIS i.e. Human Resource Information System had become a normal practice in organizations. As the 1990s approached, the internet started to play a great role on HRM activities. A survey conducted by Cedar Crestone (2006) showed that companies invested more budgets in digital technology for HRM applications. [1]

Further Digital HRM applications have become more sophisticated with ERP system which integrates HRM with various modules including financial module. Digital HRM in organizations has resulted in challenges for HR professionals to meet the rising demands.

2.2 Definition of Digital HRM: What is digital HRM?

Since the beginning of research on relation between IT technologies and HRM, many definitions have been proposed in literature to explain the concept of digital HRM. This term has been used in exchange with HR Information System (HRIS) or web-based HRM. The term refers to conducting transactions for HRM activities through internet. The term digital HRM was named as e-HRM. E-HRM was motivated from e-commerce in the business and 'e' prefix was adopted to signify 'electronic'. [2]

The term digital HRM started with definition of HR Information System (HRIS) which was defined as a 'specialized information system designed to support the planning, administration, decision-making and control of HRM processes. This definition has a limited scope as it considers digital HRM as an information system only and thus does not emphasize its role towards strategic goals. This definition does not explain adoption of digital HRM. Studies that employ this definition do not state any human resources as a research variable.

Several authors had argument over internet based channels designed to support the planning and decision-making. Some researchers argued that this definition neglects the deployment of the information systems in the corporate organization.

A decade later, HRIS was interpreted as a mechanism used to gather, manipulate, analyze, retrieve, and distribute pertinent information about an organization's human resources. Although use of HRIS term still exists, there is a difference HRIS and the currently used digital HRM. The main difference is the magnitude and reach of digital HRM.

Some researchers define digital HRM as system to conduct HR transactions using the internet. [3] By this definition digital HRM can be evaluated as improvement in the transactional HR processes but transformational outcomes of digital HRM like employee involvement or workforce alignment remains ignored as per this definition. Thus 'transactional' tradition of digital HRM using Internet technology' is a narrow definition.

Some studies expanded the digital HRM definition to a network structure as planning, implementation and application of IT for both networking and supporting all human resources of the organization in performing HR activities in a shared manner. [4]

Lepak and Snell (1998) used the term 'virtual HR' to describe a 'network-based structure built on partnerships and mediated by information technologies to help the organization acquire, develop, and deploy intellectual capital'. Actually HRIS involves systems used within HR department to improve the HR processes while digital HR aims to serve non-HR staff such as employees and managers. Digital HRM has been popular for academic usage, while practitioners use two terms 'self-service' and 'digital HRM' interchangeably.

A final group of definitions aims at a more strategic approach to digital HRM stressing what technology enables and digital HRM is now considered as a way of performing HRM rather than a collection of technologies.

Ruehl et.al. (2004) define digital HRM as 'a way of implementing HRM strategies, policies, and practices in organizations through the conscious and direct support of and/or with the full use of channels based on web-technologies'. This definition however does not highlight value addition to HR functions of organizations if digital HRM is adopted. To improve the definition, Bondarouk and Ruël (2009) redefined digital HRM as 'an umbrella term covering all possible integration mechanisms and contents between HRM and information technologies, aiming at creating value within and across organizations for targeted employees and management.' [2]

It suggests the integration of four aspects. First aspect is the content of digital HRM i.e. type of HR practices and IT technologies used, and their integration. Second aspect is the implementation of digital HRM i.e. the process of adoption of digital HRM by members of the organization. Third aspect is targeted managers and employees involved in using digital HRM activities. The final aspect is consequences of digital HRM. This definition best describes the term because it includes not only administrative elements but also the wider strategic outcomes. These four aspects are elaborated below. [5]

i) Content of e-HRM: It involves the types of HR practices supported with IT. These may be either administrative or transformational activities. It analyses IT technologies that can support HRM processes i.e. Internet, intranet, or complicated ERP systems. The match between a type of IT and the type of HR practices is required to be identified.

ii) Implementation of e-HRM: It involves the process of adoption of e-HRM by organizational members. The success of e-HRM implementation should be judged through digital HRM diffusion, acceptance, appropriation, adoption, or user-satisfaction.

iii) Targeted employees and managers: People take help of internet for employment related opportunities. This guides organizations to direct digital HRM effort towards useful candidates. It means that digital HRM should broaden its target and go beyond the organization's borders to address the needs of all stakeholders.

iv) Digital HRM consequences: It involves discussion on value creation and value capture in implementation of digital HRM which is realized by a target user. The whole organization is willing to exchange money for the value received from digital HRM. The monetary amount exchanged must exceed the costs of time, training, effort, money, meetings dedicated to digital HRM projects.

2.3 Development stages of digital HRM

It is critical to investigate and understand the ways in which HRM is conducted within companies to discover the effect of digital HRM on the work of HR professionals and non-HR managers. There are three main stages of development associated with digital HRM.

In literature, different ways to categorize digital HRM stages are mentioned. However, one thing is common in them: the highest level of digital HRM is always presented under the name of “transformation”. It shows a high consistency in identifying the maturity stage of digital HRM. [5] The following table summarizes these key development stages of digital HRM.

Table: Development Stage of digital HRM

Author	Digital HRM stages of development		
Lepak and Snell (1998)	Operational HRM	Relational HRM	Transformational HRM
Wright and Dyer (2000)	Transactional HRM	Traditional HRM	Transformational HRM
Lengnick-Hall and Moritz (2003)	Publishing	Automation of Transactions	Transformation
Ruel et al. (2004)	Cost reduction	Improve HR Services	Improve strategic orientation
Foster (2009)	Replication	Enhancement	Transformation

According to Lepak and Snell (1998), three stages through which HRM is developed include operational HRM, relational HRM and transformational HRM. Wright and Dyer (2000) too approached to similar conclusion with development stages as transactional HRM, traditional HRM, and transformational HRM. Lengnick-Hall and Moritz (2003) view digital HRM as a process of

transformation and development. The first stage of digital HRM involves the display of HR information which is one sided communication from the company to employees and managers. The next level enables the automation of transactions and supply-chain integration. The final stage of digital HRM is that it matures into full transformation of HR functions.

3. SIGNIFICANCE OF DIGITAL HRM: Why digital HRM is important?

Digital HRM can benefit the organization in definite ways. An implication of the automation of tasks and process is saving of financial and human resources. It further helps in reduction of HR costs and less usage of paper. It assists managers in HR process. According to Hendrickson (2003), digital HRM benefits an organization by increasing the efficiency and effectiveness and provides self-service for HR activities. With this system, employees can enter and update data by themselves which results in more accuracy of data and it saves time and costs. Digital HRM provides effective human resource decision making thus reducing process and administration cost, speeding up transactions, improving the tracking and control of HRM activities. [1]

Digital HRM is able to increase the overall efficiency for the management of an organization. It helps the HR department to possess of single data base of all employees in the company with all necessary information. HRIS eliminates the paper forms that are much slower and has a likelihood of human errors.

For the employees, digital HRM provides the possibility of independent access to information and helps in tracking and reminds to business responsibilities. It lets the employees attend internal training courses via the web in order to develop their skills and knowledge.

In a nutshell, digital HRM is a computerized system that assists the information related to human resource management and has become a key element to all organizations. Thus, the importance of digital HRM can be seen everywhere, such as assistance in preparing reports, simplifying the procedures and providing diverse information to the management of the organization, to make quality decisions related to human capital strategies.

Benefits of digital HRM/ Benefits of Information Technology

Technology affects organizations and work relations in organizations by enabling to join people electronically providing some benefits towards realization of objectives and goals of organizations. [1]

Decrease in cost: IT reduces costs of processes such as postal cost, announcement cost and data processing cost. E-selections and e-recruiting decreases cost of staffing and selections and increases hiring efficiency. It allows employees to perform their own work themselves directly. Self-service technology reduces the processing costs of HR up to 75%.

Saving in time: Digitalization reduces time to acquire and analyze information. Research shows that recruiting process time is reduced by twelve days.

Increase in efficiency: Intense use of IT standardizes routines. HR professionals may focus more on interpreting information rather than administrative activities. HR professional can respond the problems in a timely and effective manner.

Enabling communication and collaboration: IT is a tool for effective communication and collaboration. E-mail, messaging, discussion lists, videoconferencing, virtual teams, electronic workgroups, and teleworking have enabled workforce interactions even when employees are not actually present in the workplace. Participative decision making is facilitated through the organization hierarchy and structure.

Competency Management: IT tools enable HR professionals both to reach larger candidate pool and make decision making more objective.

Knowledge Management: Knowledge management is a systematic process of acquiring, creating, learning, and using experiences to enhance decision making. Using IT tools can improve skills for knowledge acquisition and distributions.

Structuring Strategic HR: Strategic role of HR is to align HR activities with HR strategies. IT builds efficient HR units and allows them to engage in more significant strategic roles because they get time to interpret information, develop strategies.

New Processes supported by IT: Adaptation of IT in HR functions has generated new processes related to HR. These applications are e-learning, virtual recruitment, self-service HR and new types of working.

4. CHALLENGES FOR DIGITAL HRM

Although digital HRM is becoming popular among academics and practitioners, research is still in its youth-phase. There are limited research studies that have analyzed role of digital HRM on value

enhancement in HR functions of organization. Further few studies have focused on issues such as the impact of digital HRM on the role and competencies of HR.

Certain studies investigated how HR professionals are influenced by extensive use of IT within the HR department. They examined how HR professionals handle HR information as well as the expectations due to increased reliance on IT. Further, most of research has been performed in USA and Europe compared to Asia.

HR Competencies for digital HRM

Competencies are defined as an individual's knowledge, skills or abilities. Competencies are personal characteristics about individuals which describe who they are, what they know and what they do. Dynamic trends in the external business environment demand that HR professionals should develop new capabilities and competencies. [6]To respond new role expectations HR professionals must learn and develop new skills.

Technological Competencies: Computer literacy a required skill in HR today. Organizations want HR professional to keep up with development in digital HRM and to effectively implement and manage HR information technology. HR professionals use IT for acquiring data and must have competencies to transform these data into valuable knowledge. HR professional should identify technology needs and manage technology supplier to evaluate and support HR functions.

Business knowledge: Digital HRM plays an important role for HR professionals to focus on strategic partnership. In order to be an important player in organizations and add value for organizations HR professionals must understand business strategies about finance, marketing, supply chain management, customers, competitors, financial markets and globalization.

Change management: HR professionals should have the competencies of change management to help organization members to manage change and add value to their organization.

Factors influencing adoption of digital HRM

Numerous studies have been done to understand the factors of adoption of digital HRM both at organizational and individual level.

Among innovation adoption studies, a huge number of studies followed diffusion of innovation theory proposed by Rogers's in 1995. Using diffusion of innovation theory Rogers connects the adoption decision to five specific attributes: relative advantage, complexity, compatibility, trial ability and observability (Rogers, 2003). In another research five contextual factors were identified which influence innovation adoption: innovation characteristics, organizational characteristics, environmental characteristics, task characteristics and individual. Based on research literature three sets of factors have been categorized: organizational, technological and environmental. [1]

Organizational Factors: Size of organization and organization settings of workforce are critical factors in successful adoption of digital HRM.

Technological factors: Factors for implementation of technical infrastructure affect the adoption process and how comfortable are employees with the technology used.

Environmental factors: Environmental factors depend on functioning of organizations and depend on industry characteristics and government regulations.

5. ANALYSIS OF ROLES OF DIGITAL HRM ON VALUE ENHANCEMENT OF HR FUNCTIONS:

There has been much discussion in the literature about the possible goals and outcomes of digital HRM. Ruel *et al* (2004) suggested achieving four goals through digital HRM viz. cost-reduction, improving HR services, improving strategic orientation and global orientation. [5]

Most of literature studies suggest two main benefits of digital-HRM for the HR function: efficiency enhancement and cost reduction. Further it facilitates a more strategic role for the HR function. [6]

The adoption of digital HRM is based on the expectation of these positive consequences from digital HRM. Therefore research is continuing to establish the relationship between digital HRM and value enhancement of HR functions in terms of efficiency and strategic orientation for the HR function by adopting a well-established theoretical framework in this analysis. The potential consequences of digital HRM will be explained through resource-based view by examining the relationship between digital HRM and certain organizational characteristics.

The resource-based view defines the firm as a collection of resources that are valuable and imperfectly substitutable. These resources are the main source of competitive advantage for an organization. A number of researchers have applied the RBV to the field of strategic human resources through the reasoning that the knowledge, skills and activities of the workforce are core resources that contribute to the firm's competitive advantage. The role of human resources towards competitive advantage has been considered to a great extent in the RBV literature. [7]

The knowledge, skills and actions of human resources create value from resources. Research justifies that competitive advantage occurs only when certain resources perform heterogeneously across the organization. That is why human resource is the sources of above normal returns as compared to physical assets. This assertion means that efficient development and deployment of HR is needed for maximum value creation.

Value for the HR function can be defined as “the strategic benefits achieved from a particular HR activity relative to the costs associated with its deployment”. In case of HRM, the HR function can contribute to a firm's competitive advantage through effective deployment of the firm's human resources. From RBV perspective, if a firm is able to perform HR activities in a superior way it achieves competitive advantage. [7]

Where a firm has an HR-derived competitive advantage it is able to capture more value or rents than rival firms. Rents can accrue to a firm which carries HR activities at lower costs. Transactional HR activities could be a source of rent-generating advantage with lower costs. Thus HR functions could be conceived of as resource-creating activities.

HR practitioners are expected to be strategic and to act as a business partner for competitive advantage. The broad goals for HR can be of three distinctive types: to improve transactional and traditional HRM services, to address the strategic objectives of organization and to be cost effective. [6]

From RBV prospective HR function can increase its use value by achieving above goals. Bowman and Ambrosini (2000) divide labor into generic and differential labor. The generic labor conducts routine tasks that are imitable. The differential labor is heterogeneous across the firm and is a source of uniqueness and potential profit and can lead to competitive advantage. [7]

Digital HRM can increase the efficiency of HR activities, improve HR service delivery and transform the role of the HR function into one that is more strategic.

Efficient management of generic labor

Digital HRM can improve the efficiency with reduced costs and increased speed of processes. It can streamline transactional processes and can produce efficiency gains or cost reductions by reducing headcount. The use of technology provides a more efficient way of performing routine HRM tasks reducing numbers of HR staff. Thus HR staff produces a rent-generating advantage. Thus organizations using digital HRM will have a lower ratio of HR staff to total employees.

Support of differential labor

The digital HRM can promote differential labor activities due to transformation of the HR function into a more strategic one. More strategic HR function may be more effective at developing resources and will therefore generate higher value. The conclusion is that HR function will be more strategic in organizations using digital HRM.

Further digital HRM can affect the “relational” aspects of HRM by increasing ability of managers and employees to connect with other parts of the organization to perform HR activities themselves. The sophisticated digital HRM systems facilitate the performance of HR tasks by managers through self-service.

6. DISCUSSION AND CONCLUSION

The use of digital HRM increases the organization's competitiveness. Use of IT within the HR functions increases effectiveness and efficiency of HR practices, decreases time and costs. Moreover, IT facilitates distributions of information and empowers organizational decision making and knowledge management.

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Autobiographical Sketch of Author

I am currently working as an Assistant Professor of Management at the Chanderprabhu Jain College of Higher Studies & School of Law, Delhi. I did B. Tech. in Computer Science from Kurukshetra University. I received MBA degree with specialization in 'Human Resource Management' from Guru Gobind Singh Indraprasth University, Delhi. I qualified UGC NET examination in human resource management for pursuing career as Assistant Professor. My teaching areas are organization behavior, business statistics, personality development, and marketing management. My research interests include the evolution of principles and practices in Human Resource Management especially digitalization in HRM activities. Earlier I had worked as software engineer in Tata Consultancy Services (TCS) for three years.

ICT in Social Development

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ABSTRACT

“By giving voice and visibility to all people – including and especially the poor, the marginalised and members of minorities – the media can help remedy the inequalities, the corruption, the ethnic tensions and the human rights abuses that form the root causes of so many conflicts.”

-Kofi, Annan, Former Secretary General, United Nation

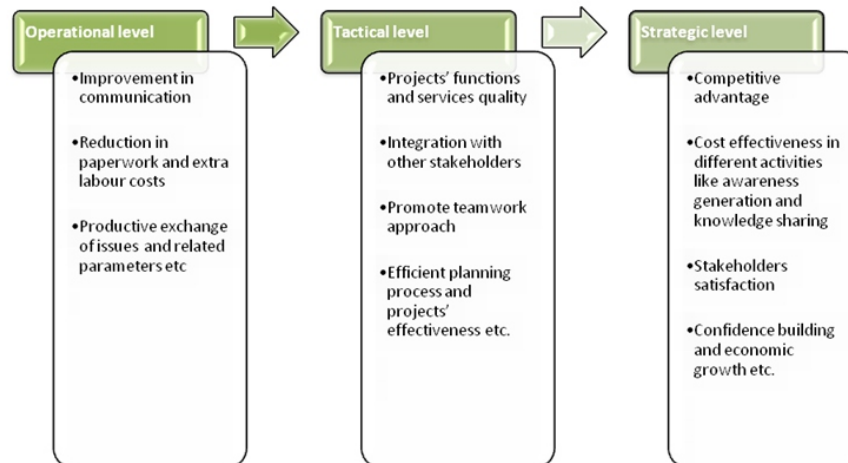
Information and communications technologies (ICTs) are different tools and technologies to transmit information and communicate with the community (one to one or in groups). Through the use of computers and interconnected networks it provides a feasible and accurate platform to increase the mobility of information for different issues and exchange of knowledge. The society gets to know about the outer worlds' progress and learn solutions of various basic problems. An efficient utilization of ICTs in different developmental initiatives can enhance the productivity of the projects and its impacts on the society. Different ICTs' tools and technology services can be very economical and feasible which can play a significant role in improving the knowledge capital and awareness in the community. ICT fulfils the objective of an efficient planning, monitoring and implementation of different development programmes. Its role has become very vital for the various livelihood projects such as poverty alleviation, health hazards, universal education, and sustainable development and in bridging the digital as well as socio-economic divides in the world. E- Governance in different states provides an interesting example of an efficient two way interaction of community with the governments. This provides a platform for the community and governments to interact and exchange information about various issues and take different initiatives accordingly. The governance becomes more participatory and transparent pertaining to focus on the local issues and developmental process.

1. INTRODUCTION

Information and communication technologies (ICTs) have become a backbone for a proficient governance and implementation of any developmental project. Management of different parameters and issues related to the initiative needs information about the available resources, demographic factors, barriers in communications and available channels to communicate with the community to address the issues. Management of information systems involve three primary resources: people,

technology, and information. ICT also provides a technical efficiency for development process. The effective use of ICT can provide inter and intra competencies in people and process management of various plans of actions under different levels namely operational Level, tactical Level and strategic Level. Some of the visible benefits of ICTs can be illustrated as

Advantages of ICTs implementation



2. ICT ENABLED COMMUNITY

Also electronically included community plays a major role in synthesising the problem in an efficient manner. ICTs penetration in the region provides important information about the communities' awareness and development in that region. The electronically included population provides and facilitates the governments regarding various issues and happenings in the economy at large.

2.1. The information flow and participatory community is very significant for a proper development action plan. The table below exhibits the penetration of internet in various continents

Table 1. World Internet Usage and Population Statistics.

World Regions	Population (2011 Est.)	Internet Users (Dec. 31, 2000)	Internet Users Latest Data (December 31, 2011)	Penetration (% Population)	Growth 2000-2011	Users % of Table
Africa	1,037,524,058	4,514,400	139,875,242	13.5 %	2,988.4 %	6.2 %
Asia	3,879,740,877	114,304,000	1,016,799,076	26.2 %	789.6 %	44.8 %
Europe	816,426,346	105,096,093	500,723,686	61.3 %	376.4 %	22.1 %
Middle East	216,258,843	3,284,800	77,020,995	35.6 %	2,244.8 %	3.4 %
North America	347,394,870	108,096,800	273,067,546	78.6 %	152.6 %	12.0 %
Latin America / Carib.	597,283,165	18,068,919	235,819,740	39.5 %	1,205.1 %	10.4 %
Oceania / Australia	35,426,995	7,620,480	23,927,457	67.5 %	214.0 %	1.1 %
WORLD TOTAL	6,930,055,154	360,985,492	2,267,233,742	32.7 %	528.1 %	100.0 %

2.1.1 As per the table, while North America is on top having around 79 % electronically included population and Africa shows the poorest penetration at around 13% only. An electronically included community can also suggest governments about different steps in order to an efficient and fast implementation of a development programme. Better access to information and communication technology is also an indicator of a developed society. Information and communication technologies benefit the development process of a society in different manner like improvement in the understanding of community, better understanding of different services by governments, linking and understanding of different local issues with global issues, share and learn new practices from other parts of the world, facilitation of capacity building services of SHGs and village level bodies, knowledge about the rights, objective and development aspects of the development projects etc

3. DEVELOPMENT COMMUNICATION AND RURAL DEVELOPMENT

Communication for development process is very important. Different methods are used in order to develop the information exchange platform with the community. This mobilizes the rural people and intensifies the process of development. These play an important role and assist in solving and designing projects and programmes with taking account of opinion and capacities of communities (actual beneficiaries). Some of different methods to sensitize the community for a participatory process of social development can be exhibited as

Methods of development Communication and its impacts

Method of development Communication	Description, Benefits and Impact
i. Community Radio	A broadcasting system, which is collectively owned by the community or any NGO/ foundation. Provides voice to the rural population specially those out casted. This enhances knowledge, and capacity and confidence building in the welfare initiatives.
ii. Participatory Video	A set of technologies to involve community in voicing out different issues at their own. Participatory effort plays an important role helping in tackling issues which is very beneficial for the governments and policy makers.
iii. Documentaries	Small films showing special issues and themes addressing different livelihood problems/ solutions. This provides a great source of information about an issue and moves of communities according. This provides a rich information for taking appropriate actions.
iv. Folk Media	This provides a tool of traditional communication. This is used for different awareness programmes and information exchange programmes about different local issues.
v. Community Newspaper	A powerful medium to reflect the community voices and new issues, innovations, development initiatives are shared. This is a community owned newspaper and focus on the community and different dimensions of the livings. Different issues at local level viz. women empowerment, agricultural development, health care, education initiatives etc. can be shared to motivate and increase the confidence of community in the inclusive local development.

3.1 Importance of ICTs in Local level economic development

ICTs can play a role of fundamental enabler in creating and sustaining a flexible and competitive social environment. ICT provides anywhere, anytime access to important information, through easy to deploy, scalable, cost effective and common information infrastructure. The importance of ICTs on a day to day livelihood can be exhibited in a number of ways. Few of them can be explained as

3.1.1. Economic Capital: Through the support and strengthening of local financial institutions, the different information and awareness programmes can improve information provision on services and facilities available, like loans and savings schemes. Community based financial management such as savings schemes can also be introduced, together with extended communication among a wider community reach for the financial institutions. Through this the economic activities can be generated at local level which will enhance the financial inclusion in the local economy.

3.1.2. Education & Awareness: Improved access to the information and communication technology can enable an economy in sharing of knowledge, education to the interior regions through using different cost effective information and communication tools. Education facility in digital mode can be transferred easily in the form of text, images, video and radio, combined with the vast storage capacity of PCs, CDs and DVDs, which also reduces time and associated engagements. Through the improvement of education, awareness about new communication technologies and channels, the economy enhance their overall socio-economic development.

3.1.3. Resources Capital: With the use of ICT tools, institutions can improve their efficiency in data management, resource management and different records. Proper use of communication technology can enhance the information exchange with the stakeholders and in turn the organizations can utilize their human, capital and other resources in an optimal way. The improved access can bring better knowledge management and can provide a two way communicating platform for everyone to convert their tacit knowledge and ideas into the explicit ones.

3.1.4. Social Capital: Improved networks can provide a much wider community platform to discuss different ideas, knowledge exchange and innovations. New social networks at a regional and national level can also help them to bring benefits to existing networks and institutions at a local level, such as community based organisations, cooperatives etc. The expansion of social networks may also increase the new opportunities for employment both locally and further nationally.

3.1.5. Physical Capital (Economic): It can also facilitate better access to markets and market information which improve choices for the sale of goods in local markets according to enhanced information on prices and comparative supply and demand for products. In the process, new markets, techniques, efficient production, can be explored which can provide employment and be helpful in poverty reduction.

4. CONCLUSION

An aware and electronically included community itself provides governments and project implementation agency about the solutions for an inclusive project management. Governments need to build the information and technology infrastructure to monitor the projects and in the implementation processes. ICT provides a two way process of project implementation i.e. top down approach and bottom up approach. Top Down approach needs an efficient management information system for all the internal stakeholders. Bottoms up approach provide the understanding and satisfaction to the other stakeholders of the community. Project implementation agency always should keep this in mind that the community is better equipped with the solutions of their problems. There have been many cases of corruption and misutilisation of funds in the social development projects. Many social development projects have been on paper only to eyewash the governments including NREGA, RGSM, Mid day meal Scheme etc. Awareness among the community and their rights must be taken into prime consideration. Good ICTs penetrations in the society enable them to voice their opinion and showcase the loopholes of projects at a transparent manner. Microeconomic development of a society needs a bottom up approach and a participatory framework to discuss the issues and find the solutions.

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