
Intellectual Asset Improvement: A Case Study

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Structured Abstract

Purpose – To document a case of university regarding its intellectual asset improvement efforts and their potential outcome in terms of research.

Design/methodology/approach – UMT case is developed on the basis of Intellectual Capital Structure and knowledge Management Model for research activities presented by Bueno *et al.* (2003). All the data used in the study is of secondary in nature, compiled by authors for meaningful interpretations.

It has shown how systematic process of faculty evaluation and improvement in inputs on basis of result of assessment can dramatically improve desired outcomes. UMT is successful in maintaining and enhancing its Intellectual Assets by just taking right decisions on basis of last year evaluation.

Originality/value – The study shows improvement in intellectual assets, tools and techniques used in the case may work as benchmark for the studies on intellectual asset improvement. The case is original in nature as documented from experiential records of the university.

Practical implications – This study offers a perspective on how a university in developing country handles the issue of continuously improving its faculty. Instruments and techniques identified in the case offer practical help to universities in developing countries in developing their ability to identify, assess, manage and improve Intellectual Assets.

Keywords – Faculty Evaluation, Intellectual Assets, Intellectual Capital, Knowledge Management, universities

Paper type – Case Study

Faculty is considered to be significant intellectual asset of any educational institute. In order to be competitive in boundary less academic market place, institute has to harness and continuously improve the intellectual assets. Intellectual Asset is knowledge built up over the period of time and it runs knowledge society. Therefore it is important for organizations to have framework to develop intellectual assets.

In a university intellectual assets are developed by the faculty. The development of faculty continuously is likely to result in continuous improvement in intellectual assets. In developing countries there exists an acute shortage of qualified faculty, so there is need to continuously improve existing intellectual assets of university and contribute to knowledge society.

The intellectual asset improvement process of University of Management and Technology (UMT) has been studied as case study. The variety of efforts has been made for the development of faculty to enhance their intellectual assets and this provides real insight for others to be acquainted and benefited with. The documented case of UMT reveals various dimensions to treat faculty as asset of organization and utilizing it for competitiveness of institutional performance while improving it continuously.

The UMT case study presents the history of intellectual assets over the period of 5 years. The process may help other institutions specially in developing countries to measure and manage the intellectual assets of faculty thus assisting in achieving higher level of performance.

1 INTRODUCTION

Intellectual assets can be defined as information, publication of new knowledge (Klaila & Hall, 2000) that is research output in any university. Knowledge creation and knowledge dissemination being prime objective of the universities necessitates emphasizing on Intellectual Asset improvement and raised the need of higher investments in terms of efforts to promote research (Elena, 2004). Faculty is important intellectual asset of the university (KPMG, 2002) Faculty is also responsible of generating new knowledge in terms of conference papers, Journal publications, research papers, patents, reports, proposal and books etc. therefore it is prime responsibility of universities to improve faculty over the period of time and to facilitate them with environment conducive to research ("Research Performance," 2007)

Knowledge economy is shifting from managing knowledge to creating new knowledge (Halal, 2002) but in developing countries there is severe shortage of qualified faculty to produce better quality research . In such case universities are left with only option to improve their existing Intellectual assets and invest in their Intellectual and Human Capital (Elena, 2004). The link between Intellectual Capital(IC) formation and performance of a university has been studied and it is also suggested to investigate extensive measurement mechanism and instruments to gauge IC formation and performance of university(Yazdani, 2008). The paper attempts to explain the University of Management and Technology (UMT)'s efforts to improve its Intellectual Assets over the period of five years with all the constraints of being part of developing country. It has shown how systematic process of faculty evaluation and improvement in inputs on basis of result of assessment can dramatically improve desired outcomes. UMT is successful in maintaining and enhancing its Intellectual Assets by just taking right decisions on basis of annual evaluations of faculty members

2 LITERATURE REVIEW

2.1 Roll of university in knowledge society

Knowledge societies are run by Intellectual Assets and characterized knowledge development and diffusion. Knowledge formation and dissemination are also basic core functions of universities that is why universities are vital contributory to

knowledge society (Sánchez, Castrillo, & Elena, 2006) input and output of universities are intangible but lesser attention has been given to IC measurement and development in academia as compared to business world(Warden, 2004)

Universities are facing several challenges ranging from internationalization of education and research to new modes of research. To confront these challenges universities should play vital role in knowledge economy and refine their knowledge management processes to foster IC models to achieve research objectives of universities(Yolanda Ramí´rez, 2007)

Knowledge Management (KM) studies shows a wide range of viewpoints regarding its description, mechanistic view takes IC approach examining intangibles as assets. While socially oriented point of view advocates constructionist approach addressing knowledge creation in social relationships contained by organization(McAdam & McCreedy, 1999)

2.2 Role of higher education commission in Pakistan to improve research

Higher education sector is on the boom these days, which has started almost two decades ago. After the establishment of Higher Education Commission (HEC) formerly university grant commission) as an autonomous body, a dawn in the university life has been observed. Number of new programs like foreign scholarships, conference funding, digital resource access, online repository and partnerships between industry and academia has been initiated to foster the intellectual development in higher education institutions ("Higher Education of Pakistan,")

The real efforts for intellectual asset development have been experienced with the comprehensive support package. The entrants of new universities in private sector, expansion of public universities and offering of new programs/disciplines have given the new life to efforts of knowledge development and management. The growth in research output of faculty, paper citations and other knowledge based output has been accelerated into new dimensions. The width and depth of knowledge output also increased through drastic enrolment in research programs

(P.hD/P.Mhil) and variety of new subject, approached by academic scholars (Jahangir, 2008)

2.3 Measuring IC

Knowledge Management industry's growth is pertinent IC management and role of intangible in organizational success. However there is a vacuum in measurement techniques of IC which reflects back on valuing intangibles and IC (Kannan & Aulbur, 2004)

During last decade researchers contribute much in the field of measurement of intangibles and IC. Over 30 methods of evaluation and 25 analyses have been identified but now IC community has penetrated in consolidation phase. Researchers are now exploring the answers of questions of why IC and how to measure IC.(Andriessen, 2004)

Measurement of IC is important to value its original essence instead of conventional reasons; measurement should be viewed as part of management processes and treat it as input instead of output and couple it with intervention(Mouritsen, 2004)

3 UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

The University of Management and Technology (UMT) has its roots in the Institute of Leadership and Management (ILM), which was established in Lahore in 1990. Spurred on by the great success of ILM, the institution applied for a University Charter, which was granted to it in 2004 to promote the environment of higher learning in Pakistan. UMT offers various graduate and undergraduate programs with dynamic and updated learning contents. UMT also offered PhD/M.Phil in various subject like social sciences, management, IT and electronic engineering. UMT also pays great attention to academic environment and provide excellent learning resource, having collection of books, journals, audio/video sections and specialized facilities for research scholars. UMT is known for having the largest number of PhD faculty in private sector universities with rigorous academic environment. Since its inception UMT authorities are

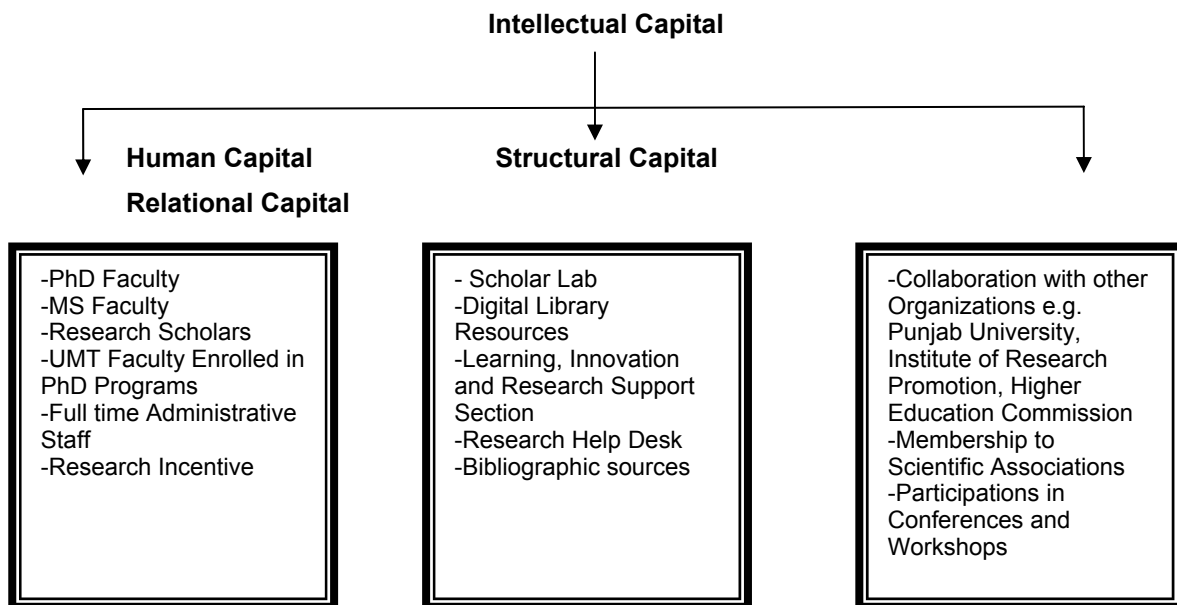
concerned with the continuous improvement of its faculty members, thus it has been chosen for the study.

3.1 Methodology

UMT case is developed on the basis of Intellectual Capital Structure and knowledge Management Model for research activities presented by **Bueno et al. (2003)**. All the data used in the study is of secondary in nature, which is used for meaningful interpretations.

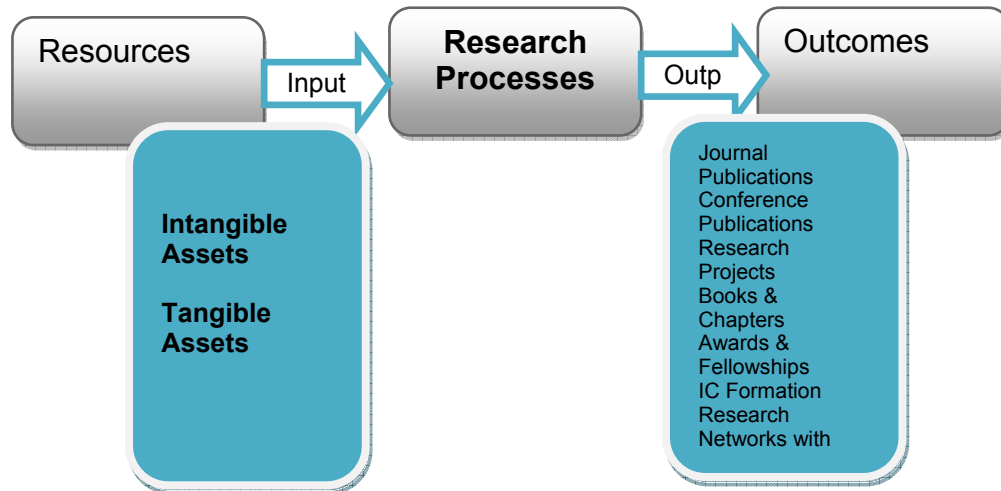
The paper aims to examine environment and inputs conducive to research outcome, and contribution of faculty to knowledge creation. UMT has been improving environment each year by providing more facilities to faculty involved in research and also evaluated faculty members at the end of academic year regarding their teaching, research, committee work and others.

INTELLECTUAL CAPITAL STRUCTURE FOR RESEARCH ACTIVITIES AT UMT



Source: Adapted from Bueno *et al.* (2003)

Knowledge Management Model for Research Activities of UMT



Source: Adapted from Bueno *et al.* (2003)

3.2 Data Analysis

RESULTS AND DISCUSSION

The paper documents the input efforts of UMT, made for the promotion of intellectual capital in the univeristy. Five year period has been selected for data anaylsis and quantative output is presented in graphics. The input efforts are presented in discriptive way along with each output figure. The results are presented in five years period, composed of intellectual output as conference paaper, journal paper, research papaers and otehrs.

2003-2004

INPUT

IC efforts of UMT carried out in year 2004 varies across the number of activitties and disclines. In regard of library Resources number of facilities are added including Current Affair Document (CAD) Services, Audio/Visual Section and significant amount of books related to higher stduies and research programs. UMT adapted recruitment policy of Higher Education Commission (HEC) regarding the hiring of Associate professors and professor. In genral it was made

it mandatory to the applicants for the job of Associate Professor to claim 10 publications at their credit with 4 publications in last 5 years. Where as it was expected from Professors to have 15 publications with 5 publications in last 5 years. Research Incentives were mostly provided in form of grant to attend conferences and workshop on individual requests. 20% weightage was assigned to research activities in term of the overall annual performance evaluation while 50% weight was given to teaching activities and remaining 20% and 10% to committee work and others subsequently as explained in Table 1. Research output is presented in four different categories i.e. conference papers, journal papers, research papers and others which include Technical Reports & Proposals / Consulting Reports Published Professional Work e.g. Engineering Design, Publication in Trade Journal, Book / Chapter of Books etc

Table 1

Input	Output
Library Resources Current Affair Document (CAD) Services Audio/Visual Section Books	04 Conference Papers 12 Journal papers 10 Others 09 Research Papers
Recruitment Policy Associate Professor 10 Publications (with 4 Publications in last 5 years) Professor 15 Publications (with 5 Publications in last 5 years)	
Research Incentives No formal incentive structure present	
Performance Evaluation Criterion	
Research Activities 20% Teaching Performance 50% Committee work 20% Others 10%	

OUTPUT

In year 2003-2004 research output position in terms of Conference papers, journal papers, research papers and others is explained in Figure 1. Only 4 conference

papers and 12 journal papers, 09 research papers and 10 others were produced during the year.

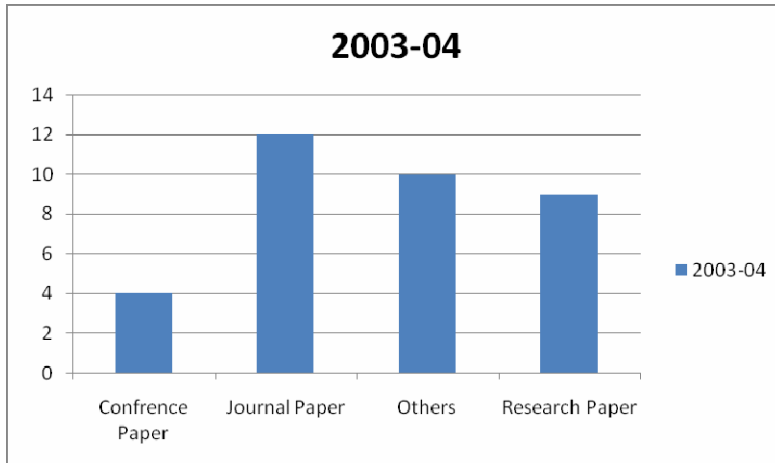


Figure 1

2004-2005

INPUT

In year 2004-2005 E- resources were brought in by introduction of EBSCOhost to support reserch activities. Pakistan Foundation London (PFL) also donated 10,000 book in all major areas. Recruitment Policy and Performance Evaluation Criteria was the same as in year 2003-2004 but Research Grant Committee(RGC) was establishes in order to regularize the research incentives. These changes in inputs are explained in Table 2 RGC formation and guidlenes are appended in Anexture # 1.

TABLE 2

Input	Output
Library Resources Pakistan Foundation London (PFL) 10,000 book donation EBSCOhost Research Incentives Research Grant Committee	50% increase in Conference Papers 08% increase in Journal Papers 130% increase in Others 100% increase in Research Papers

OUTPUT

The results of improvements in inputs have converted into real tangible output with significant change. The number of conference papers has been increased by 50%, 100% increase in research papers and 130% increase in others output is achieved as explained in Table 1. In comparison of year 2003-2004 the output has increased in all areas as depicted in Figure 2

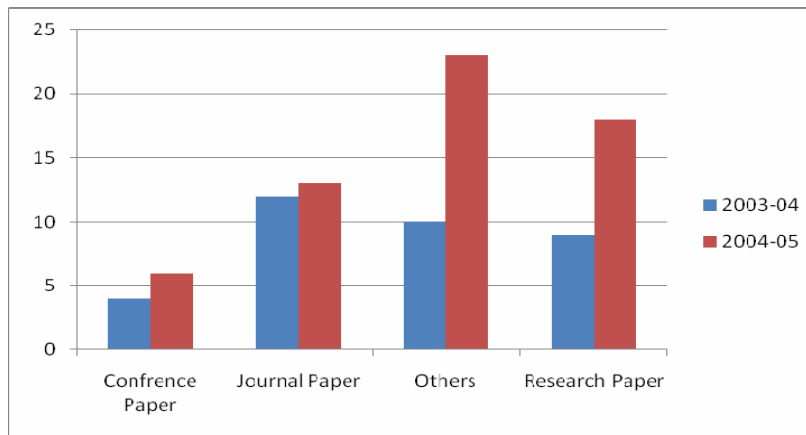


Figure 2

Fi

**2005-2006
INPUT**

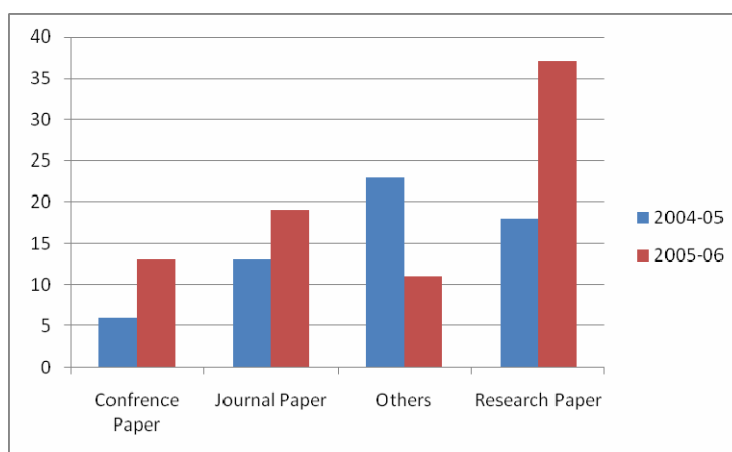
Keeping library resource, recruitment policy and performance evaluation criterion same certain policies conducive to research were introduced, explained in Table 3

TABLE 3

Input	Output
<p>Research Incentives Research Grant Committee Policies</p> <ul style="list-style-type: none"> • A+ grade in evaluation is not awarded if faculty members do not get involve in research. • Faculty of all Schools is in encouraged to get themselves registered in PhD program on 75% discount in UMT. • Course load for PhD scholars is reduced upto 50%. • UMT sponsors its faculty members to study abroad. • An extrinsic benefit of Rs 100,000, is given for authoring a book. 	<p>117% increase in Conference Papers 46% increase Journal Paper 52% decrease in Others 105% increase in Reserch Paper</p>

OUTPUT

After increased incentive to reserch output doubled in conference paper category and Research Papers and there is 46% increase in Journal papers although decrease in others items is notified in Figure 3



2006-2007

INPUT

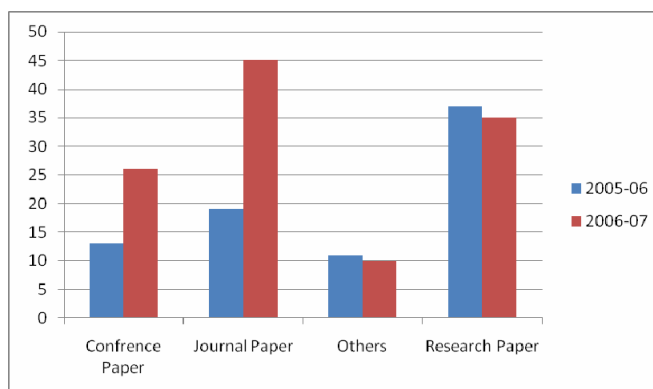
Library resources were improved and more digital resources were added to support researchers. UMT did not change its recruitment policy but increased its weightage from 20% to 25% for research activities in performance evaluation criteria as shown in Table 4 and a decision was taken in light of HEC Manual (Raouf, 2006) and self-assessment form for the faculty is appended in Annexure # 2.

TABLE 4

Input	Output
<p>Library Resources Digital Resources ACM Digital Library Wiley InterScience Journals Cambridge Journals Online EBSCO Host Emerald</p> <p>Performance Evaluation Criterion Research Activities 25% Teaching Performance 50% Committee work 20% Others 05%</p>	<p>100% increase in Conference Papers increase journal paper 136% increase in Journal Paper .9% decrease in Others 05% decrease in Research Paper</p>

OUTPUT

These efforts increased conference papers and journal papers many folds while research papers decreased by 5% and others decreased by less than 1% in comparison with year 2005-2006 shown in Figure 4



2007-2008

INPUT

UMT library has now subscriptions to various electronic and online digital resources to provide access to wide range of online collections related to various academic disciplines. Many publications are being made available through this facility to provide campus-wide access to e-databases of more than 14000 peer reviewed leading international journals. Certain other services like Research help desk and faculty liaison services were introduced in this year. Extensive capacity building workshops and conferences were conducted in-house as well participants sent to other organizations to improve their research skills. Rest of the attributes remained same as in last year and changes are explained in Table 5

TABLE 5

Input	Output
<p>Library Resources Digital Resources</p> <ul style="list-style-type: none"> • ACM Digital Library • Wiley InterScience Journals • Cambridge Journals Online • EBSCO Host • Emerald • JSTOR • SpringerLink • Taylor & Francis Journals • University of Chicago Press • African Journals Online • Bentham Science Publishers • Mary Ann Liebert Publisher <p>Research Help Desk Services E-Books</p> <ul style="list-style-type: none"> ○ Ebray ○ McGraw-Hill Digital Engineering Library ○ McGraw-Hill's Encyclopedia of Science & Technology ○ McGraw- Hill's Access Medicine ○ OUP E-books Oxford Scholarship Online <p>Faculty liaison services Capacity Building Workshops Seminars Coloquims</p>	<p>92% increase in Conference Papers 2% increase Journal Paper 282% increase in Other 65% decrease in Reserch papers</p>

OUTPUT

Capacity building efforts motivated researchers to present and publish their work that is why there is notable increase in other output by 282% as compared to the last year, 92 % increase in conference papers and decrease in research papers is depicted in Figure 5

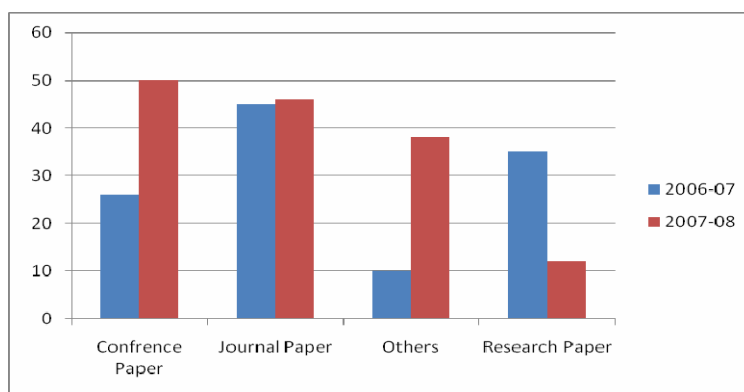


Figure 5

SUMMARY OF RESULTS

All efforts made within the period of 5 years in terms of library resources, recruitment policy, research incentive, capacity building, performance evaluation criterion has improved research by many folds as shown in Figure 6. In year 2003-2004 the total research output was 35 that is sum conference papers, journal papers, research papers and other research output which gradually increased with each passing year and peaked at 146 in year 2007-2008.

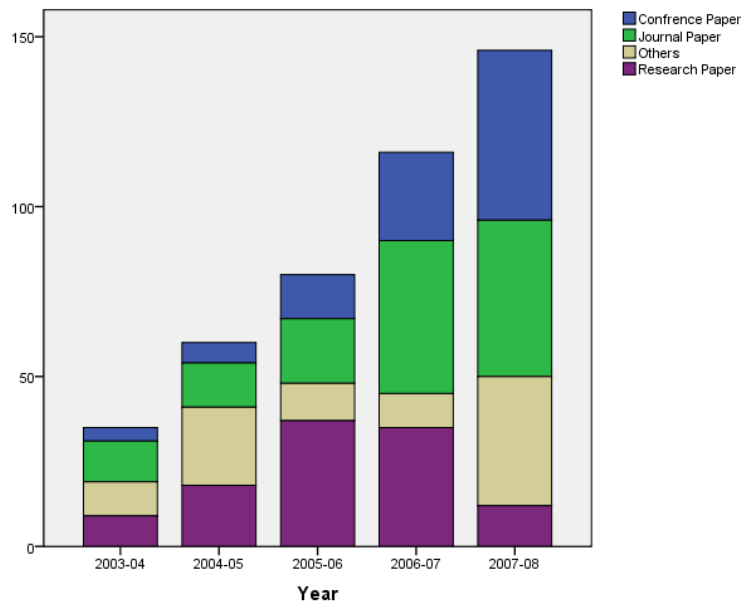


Figure 6

4. CONCLUSION

As there is acute shortage of qualified faculty in developing countries this necessitate universities to develop their existing intellectual assets to produce new knowledge and contribute to knowledge society. The presented case takes form of review of UMT Intellectual Asset Management and improvement initiative over the period of five years. Right now we are not in position to say specifically which input factor has influenced the research output more but there is substantial increase in IC of UMT as result of all efforts made over the period of five years.

There is more than 300% increase in research output within five years after incorporation of decisions taken on the basis of faculty evaluation of previous year, which is truly an explicit indicator of continuous improvement of intellectual assets.

In UMT, intellectual assets have been improved over the period of five years. The inputs identified for improvement of Intellectual Assets is useful for continuous improvement. Instruments and techniques identified in the case offer practical

help to universities in developing countries in developing their ability to identify, assess, manage and improve Intellectual Assets

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Annexure # 1

Guidelines for Research Grant Request in an International Conference

Request for the research grant will be submitted to Office of Human Resources (OHR) on the enclosed Application form duly recommended by concerned Dean. The Research Grant Committee will evaluate the application and it consists of following:

Research Grant Committee

- | | |
|---|-----------|
| 1. Dr. Abdul Raouf, UP&A | Chairman |
| 2. Dr. Abdur Rashid Kausar, Pro Rector | Member |
| 3. Dr. Rukhsana Kalim, Professor SBE | Member |
| 4. Dr. Ehsan Ellahi Khawaja, Professor SST | Member |
| 5. Dr. Uzma Qureshi, Associate Professor SSSH | Member |
| 6. Mr. Ahmad Abdullah, Head HR | Secretary |

The Research Grant Committee has finalized the following guidelines for awarding the funding:

- Conference Classification
 - o It must be sponsored by a professional body
 - o The paper must be accepted by reviewing the full paper not on the basis of paper abstract
 - o It must appear in reviewed proceedings
- Applicants are advised to seek the HEC grant before applying to UMT
- Deans must forward the applications to committee atleast one month before the start of conference date, reimbursement cases will not be considered.
- Lecturers and PhD Scholars are not eligible for financial support from UMT, they will be encouraged to avail the funding from HEC and other funding agencies
- Financial support will be provided to the maximum of one faculty member per school in a given year. Those who have availed this facility once are not eligible for the support in the same year
- Year will be considered as budget year i.e. July 01 to June 30
- Research meetings will be held twice in a year i.e. one in each semester
- Foreign per diem allowance
 - o Actual/ Lump sum reimbursement as per UMT policy
 - o Financial support will only be made for conference days (additional one day will be reimbursed if the conference is being held in North America or Australia)

Following documents must be attached with application:

A	Initial Announcement
B	The official acceptance of the paper for presentation at conference/meeting
C	Copy of the abstract
D	A copy of complete manuscript
E	Final Announcement of the meeting as soon as it is available
F	Your teaching load & arrangements made to cover your classes, labs, exams etc
G	Updated research profile

Annexure # 2

University of Management and Technology

Self Assessment Form

For the period _____

Name of faculty
member: _____

Title: _____

School: _____

TEACHING

PART A: STUDENT EVALUATION:

(Source: Student evaluation in courses, graduating student evaluation, evaluation by participants of short courses, and other sources).

Please state your comments, if any, on student evaluation:

PART B: COURSE MATERIAL:

Organization of course material, development of new courses, adherence to course syllabus, development and use of innovative methods in teaching, instructional laboratories, and other activities related to course material development. Please list your activities with regard to course material and comment on them with special reference to the assignment of course portfolio.

Sr #	Title of course portfolio	Course Code	Program	Status (Completed / In progress)
1.				
2.				
3.				
4.				
5.				
6.				
7.				

Comments:

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PART C: OTHER TEACHING ACTIVITIES:

(Advising, supervising senior projects, summer training, initiation and participation in curriculum development, course co-ordination, and participation in student activities, etc.)

Please list and comment on your other teaching activities:

Comments:

RESEARCH & SCHOLARSHIP

Report activities for the past academic year only. However, please note that your research profile for the past two years will be evaluated:

RESEARCH ACTIVITIES

1 Funded research projects:		
Status:	Role:	Release Time:
C: Completed	PI: Principal Investigator	Percentage of Time as
IP: In Progress	CI: Co-Investigator	formally approved
T: Terminated		

Project Title	Funding Agency	Start Date (mm/dd/yyyy)	End Date (mm/dd/yyyy)	Status	Role	Release Time

2 Non-Funded research projects:

Expected output: Journal / Conference publications, engineering designs, software, technical reports etc.

Research Title	Start Date (mm/dd/yyyy)	End Date (mm/dd/yyyy)	Hrs/ Wk.	Expected Output	Expected Date (mm/dd/yyyy)

3 Thesis and dissertation supervised:

Degree	Role
MP = Master Program MS = Master of Science Ph.D = Doctoral Program	S: Supervisor CM: Thesis / Dissertation Committee Member

Student Name and ID	Dept.	Degree	Thesis Title	Start Date (mm/dd/yyyy)	End Date (mm/dd/yyyy)	Role

PUBLICATIONS FOR THE LAST TWO YEAR:

Please list out by separating into the following:

Class:					
JP:	Journal Publication	TRP:	Technical Reports & Proposals / Consulting Reports		
CP:	Conference Publication	PPW:	Published Professional Work e.g. Engg Design		
OP:	Other Publication	RTJ:	Publication in Trade Journal		
		BKS:	Book / Chapter of Books		
STATUS:					
A:	Accepted / Published	S:	Submitted	UP:	Under Preparation

Please use AJSE format (example given below):

K.S. Park, "Optimal Number of Minimal Repairs Before Replacement", IEEE
Transaction on Reliability, R-28 (2), (1979), P-137.

CLASS	PUBLICATIONS (FOR THE PAST TWO YEARS ONLY)	STATUS

COMMITTEES AND OTHER ACTIVITIES

a. COMMITTEE WORK		
FORMED BY:	POSITION	TYPE OF COMMITTEE
F: Faculty	M: Member	S: Standing
U: University	C: Chairman	A: Ad-Hoc
O: Other (State)		
Semester: 1 = Summer 2 = Fall 3 = Spring		

Name of Committee	Semester	Academic Year	Formed By	Position	Type of Cttee	No. of Attended Meetings

Please state your major activities and contribution to each committee

b. TECHNICAL SEMINARS AND PRESENTATIONS:

Title	Date	Place

c. PROFESSIONAL CONSULTING:

Organization	Nature of Work	Specific Output	Hrs/Wk	Start Date	End Date

d. ACADEMIC LINKAGES ESTABLISHED OR INITIATED:

Organization	Nature of Linkage	Specific Output	Start Date

OVERALL PERFORMANCE:

Your Major targets?

Summer of 2007 to Spring 2008	Achievement Status

Your success and failures?

Sr #	Your major successes	Your major failures

What major initiatives / decisions you have taken? Or how did you contributed in the development of human and technical resources at UMT?

What are major constraints impeding your performance effectiveness?

What are your personal development plans and targets for this year?

In which areas you need further training to achieve your targets?

Membership of professional associations and list of journals/periodicals regularly referred to

--

What are your overall comments for yourself?

How would you overall rate your performance on the following scale? Please bold or encircle any of the following options.

Below Average Average Above Average Good Excellent Exceptional

I hereby declare that the information given above is correct, accurate and complete to my knowledge.

Signature: _____ Date: _____