Shared Tenant Services at PDX Towers, Portland

Course Title: Project Management in ETM
Course Number: EMGT 545
Instructor: Kocaoglu
Term: Spring
Year: 1992
Author(s): Saravanabhava Paramashivan

ETM OFFICE USE ONLY
Report No.:
Type: Student Project
Note:

Abstract

Shared Tenant Services (STS Provision at PDX Towers[1], Portland.

Project PDXTEL Summary Plan

Prepared by : Saravanabhava.C.Paramashivan
Project Manager
Yosav Telecommunications
1912, SW 6th Avenue
Portland, OR 97201.

M. 4-12 can be reduced to a very short summary (1-2 paragraphs)
→ What is the relevance of pages after 23?
→ Very few of the questions are answered in your report

[1] The names PDX Towers, XYZ Developers and Yosav Telecommunications are used generically. Any reference is purely coincidal. This report is prepared as requirement for EMGT-545 course in EMP at PSU, Portland.

Project PDXTEL

Management Summary:

Yosav Telecommunications is new entrepreneurial firm with shared tenant philosophy integrated into what is believed to be the business environment of the future.

On April 1, 1992, Yosav Telecommunication was awarded the contract by XYZ Developers, Portland for installation and operation of full range of communication services to the new PDX Tower in Beaverton, Portland.

For the project PDXTEL, Saravanabhava.C.Paramashivan is the project manager. The project manager will oversee project PDXTEL, co-ordinate with XYZ developers, Yosav Telecommunications and the tenants of PDX Towers.

The project will commence on April 6, 1992. The fixed fee contract is for system design, installation and testing of the telecommunication system. Installation will be complete by May 15, 1992. On completion of project PDXTEL the operational contract for one year starting from June 1, 1992 to May 31, 1993 is awarded. Future contract will be negotiated at the end of year one contract. The total amount of the contract is $ 80,000 with limited escalation provision. The agreement provides for increase in cost of equipment due to any statuary needs.

Project description:

PDX Towers is a new modern high-technology office complex developed by XYZ realtors. The building consists of four bays, Bay 1,2,3 & 4.

Yosav Telecommunication is responsible for design, installation and operation as in-house communication service and management firm for tenants of PDX Towers. For our project the PDX Towers under consideration is divided into four bays. The number of offices or tenants in each bay is given below.

Bay-1	Bay-2	Bay-3	Bay-4
5	4	5	6

Services offered are:

VC = Voice Communications

DC = Data Communications

VM = Voice Message

FM = Facility Monitoring

Market survey table:

A prelimary sample market survey indicates the possible demand range, minimum - maximum number of extension lines the tenants of the PDX Towers felt needed for the period 1992 to 1993 the contract time period of Yosav Telecommunications.

Demand Table:

Services	Bay-1	Bay-2	Bay-3	Bay-4	Range
Voice Communication	8-15	7-10	6-12	6-13	27-50
Data Communication	5-8	6-9	4-6	4-6	19-29
Voice Message	7-14	5-8	4-10	3-9	19-41
Facility Monitoring	5-15	4-12	5-15	6-18	20-60
Range on Bays	25-52	22-39	19-42	19-46	85/180

Concept and Technology:

Shared tenant service is an exciting concept in the telecommunications industry. Fundamentally, the concept calls for the sharing of resources by many users; resources in this case being a full range of enhanced telecommunications services offered by a highly sophisticated, high capacity digital voice and data switching system. Whether that resource is shared by tenants in a high-rise office building or in separate by tenants in a campus-style environment advanced telecommunications can be secured by any business, large or small, at reasonable rates. Customer usage is combined through this communications resource and together, users achieve economic leverage.

The benefits derived from a shared tenant environment are numerous. sharing enhanced services means users need not incur substantial capital outlays to enjoy the communications sophisticated of a digital PBX (Private Branch Exchange), because there is no major system equipment to be purchased. The switching equipment, CPU, and literally everything but the telephone themselves already have been purchased, installed, and are operating long before users need service. New subscribers simply are added as extensions to an already proven communications system. Once a stand-alone system is selected, additional costs for implementation are incurred. Stand-alone systems generally compel allocation of equipment space at users facility. Additional

facilities for air conditioning and power also may be required. Since most equipment purchased or lease agreements include maintenance and service only for the first year, a contract must be negotiated for subsequent years of coverage.

When a stand-alone system is up and running, major expenses continue, and tend to grow significantly over time. To accommodate change, new software packages and telephones often must be added, and add-on prices sometimes can be 60% higher than initial contract prices. When users outgrow their systems, they incur major hardware and software upgrade costs or invest in entirely new systems.
In STS environment, these recurring expenses are eliminated, as all these multi-vendor costs are distilled into a simple monthly subscription fee. Customers simply state their needs, and a communications system tailored to their specifications is designed and extended to their facility off of an existing PBX. Should subscribers wish to add or delete hardware or software, they simply call the customer service and their requests are implemented. At the end of the month, subscribers' bills are adjusted to reflect the applicable changes.

Service is the most important element and is unsurpassed in a STS environment. All equipment, technicians and parts are on-site, so service response is immediate, whereas service quality and response time varies widely with stand-alone customer premise equipment in a multi-vendor environment.

Central Role of the Private Branch Exchange (PBX)

telephone, the PBX became digital. To the user, a Digital Electronic Private Automatic Branch Exchange (EPABX) does not appear to be any different from an older analogue PBX, except that it offers more features. With EPABX, the switching of telephone circuits takes place though microelectronics, usually through tone dialing instead of pulse dialing. Since EPABX is based on microprocessors, it has many features:

* Programmability of Numbers for Moves

Changing telephone numbers is done through software programming rather than by actually disconnecting and reconnecting telephone wires. This makes it possible for people to "take their telephone numbers with them" as they move from one department to another within an organization.

* Call Detail Reporting and Private Accounting

PBX can provide a complete listing of each call made by each individual telephone, including the charges associated with those calls. In this way, it is possible to isolate the calling patterns of each individual in order to enforce expenditure patterns for long distance calling. Call detail reporting is an important feature for establishing the true source of costs, and it helps a great deal in the management of calling pattern.

* Number Access Control

Another useful feature of the PBX is its ability to discriminate between different telephones. Some telephones can be given complete dialing access to the outside, whereas other telephones

may be restricted only to calls within the PBX system or within the organization. Another variation might be allowing local calls within the city, but restricting long distance calls. This feature is very useful for providing universal telephone service within an organization without the risk of uncontrolled login distance telephone bills from persons who should not be calling login distance.

* Speed Dialing

PBX allow the caller to program frequently called numbers so that they can be "speed dialed" using only one or two numbers.

* Automatic Callback and Camp-on

In order to save time spent repeatedly calling a busy extension, the automatic call back option allows the user to place a call automatically when the desired extension become free. It is necessary to dial the busy extension only one, and the PBX will automatically call back the caller when the number that was formerly busy becomes available. The PBX therefore allows the caller to "camp-on" to the busy extension until it becomes available.

* Call Forwarding

Most PBX systems provide an ability to have incoming calls forwarded to another extension on the same PBX within the organization. The user programs the PBX to turn on call forwarding and keys in the number to which the call should be forwarded. This

useful feature helps persons without secretaries to avoid missing important incoming calls because they are temporarily at a different location.

* Call Pickup

Call pickup allows a person to pick up an incoming call which is going to another person's phone. This is useful when the second person is away from his or her desk or out of the office. The software features of the PBX allow pickup groups to be programmed into the system. Person who are in the same pickup group can intercept incoming calls to other persons in their group.

* Conference Calling or Party Calls

This feature allows more than two persons to speak together through the telephone. Usually one person calls a second person, places that person on hold, then calls a third person, and reconnects the second person. At that point, all three persons can speak with one another. Depending on the capabilities of the PBX, it is possible to add more than three persons to a conference call.

* Hold

The hold feature on the PBX allows the user to temporarily suspend a call while doing something else. Under these circumstances, the telephone connection is not lost, and it is possible to reactivate the call with a simple flash hook.

* Call Transfer

The transfer feature of a digital PBX allows the person receiving a call to redirect it to another extension within the organization.

In some organizations with several locations, a call may be redirected not only to another party within the same building, but to an entirely different city, many times without the caller realizing that the call is being redirected such great distances.

* Shared Modems and Data Circuits

Many PBXs also provide access to data circuits. Persons wishing to get access to a data circuit might dial a particular extension to be connected to a modem. The advantage of this is that the cost of the modem can be shared between many occasional users. With today technologies, it is possible to have both data and voice information traveling through the same circuits.

As useful as these many features of the PBX are they are well known. A new type of technology that developed quickly in the late 1980s has made great improvements in customer service for many business organizations. These new technologies give callers different types of options: they might make direct inquiries of a computer, or leave messages for pickup when the person being called is away. A firm can achieve these new capabilities for its telecommunications system by adding new types of equipment to the PBX network.

* Automatic Call Distribution (ACD) Devices

For a business setting up a call center to handle a large number of incoming calls, the ACD is indispensable in routing calls "to the next available agent who will assist you." The ACD makes sure that calls are distributed evenly among the employees answering the

telephone.

* Voice Recognition Equipment

The use of voice recognition equipment has been very successful when a business is required to give a high volume of answers to highly similar questions.

* Voice Store and Forward System (Voice Mail)

Voice store and forward systems act more or less like a personal answering machine, except that they are centered in the PBX. Messages can be received remotely, the same as with an answering machine, but messages can also be forwarded to other persons; some messages may be sent to several persons at the same time.

Project management process:

Selection of project team:

PDXTEL is the first project undertaken by Yosav telecommunications. Pure project form of organization for PDXTEL project is adapted.

Project manager is the hub of the project, prime role is to integrate every task and see that everybody accomplish the objectives and goals of Yosav telecommunications. Must be qualified in both technical and management background.

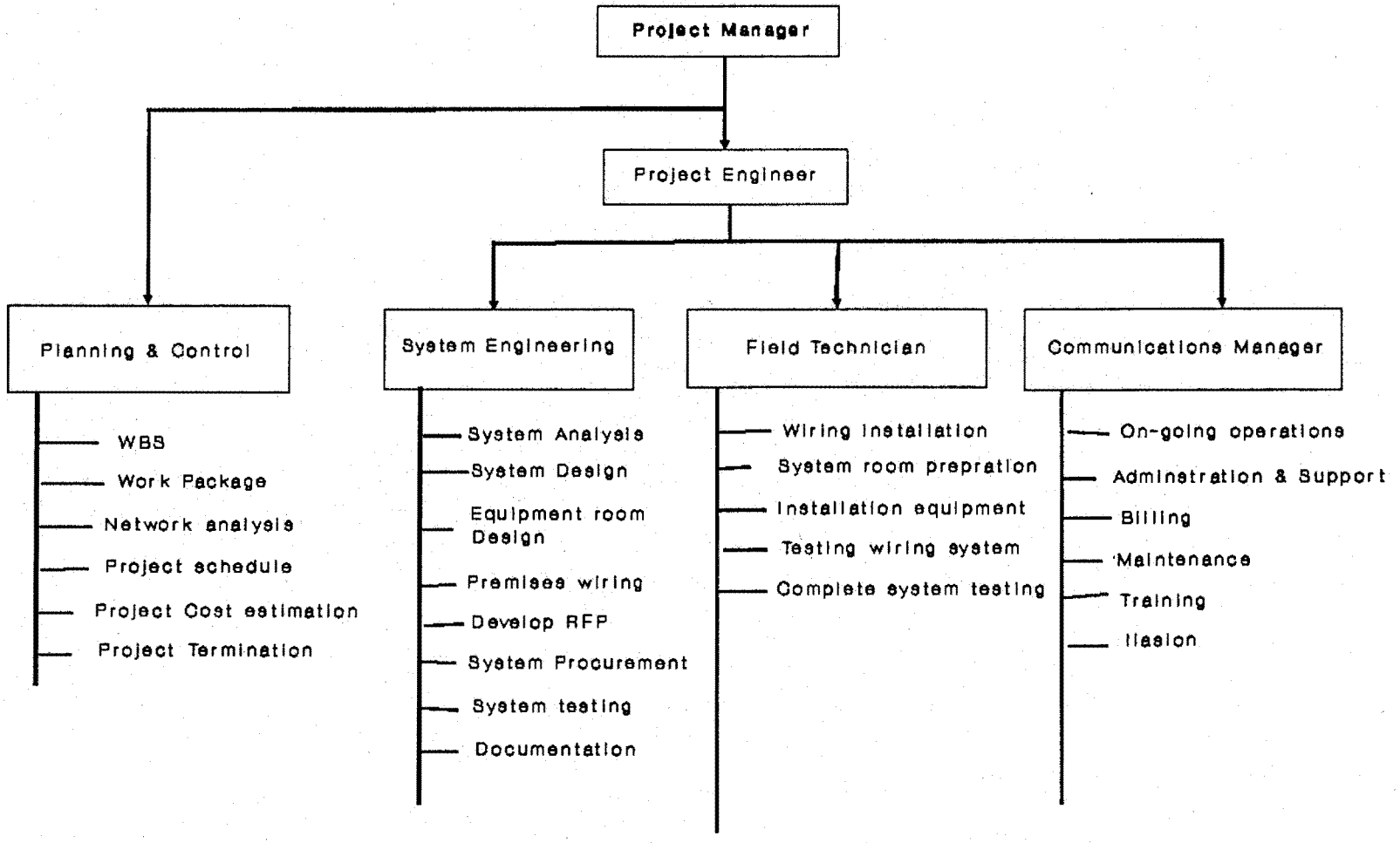
The responsibilities and authorized (pure project form) for, project planning, resource allocation, and project organization design. Must provide interface between the developer and tenants for their telecommunication needs. Monitor and control budget, ensure optimal usage of resources. Must be proactive in identify technical and functional problems. Deal with crisis and resolve conflicts. Lastly recommend termination or redirect efforts to other projects.

Project Engineer is primary job to integrating the tenant requirements into system requirements.

Responsibilities include system analysis, design, integration and co-ordinate technology areas implementation. Develop training package for the tenants to use the system effectively.

Field Technician highly skilled, experienced telecommunication technician to do the physical tasks of install of equipment, wiring network and testing of all systems. Responsibilities include to follow building wiring codes and other safety codes required.

Organization Chart with Work Break Down Structure



Responsibility Interface Matrix (RIM)

Task	Project Manager	Project Engineer	Field Technician
Project Planning	P W	S I	
WBS	P W	I	
Network Analysis	A	I	I
Cost estimation	A	I	I
Resource allocation	P W	S I	
Project Termination	P W	S	I
System Analysis	N	P W	
System design	N	P W	I
Equipment room design	N	P W	W I
Premise wiring plan	N	P W	W I
Develop RFP	P	S	I
System Procurement	P	S	
Wiring Installation	N	A	W
System room prepration	N	A	W
Installation equipment	A	A	W
Testing wiring system	A	A	P W
Complete system testing	P	S	W I

P - Primary authority & responsible for accomplishment of work package

S - Secondary authority & responsible for accomplishment of work package

A - Approval of work package

N - notification of output

I - Input

W - Work done

Project Cost Estimation:

Budget summary for **Stage -1, System design**:

Charge	Rate in $/hr	Time in days 1 - 5	5 - 10	10 - 15	15 - 18	Total Hrs	$
Project Manager	40	4	4	2	6	16	640
Project Engineer	35		20	5	6	31	1085
Field Technician	25	10		5		15	375
Equipment expenses	10	2	5	5	4	16	160
Equipment purchases							
G & A expenses	10%						226
Profit	15%						2886
			Total cost estimate				3318

Project Termination:

Termination and operation is concurrent in this project. Operations required is for 24 hours a day, 7 day a week. This calls for traditional functional managers. A manager with good knowledge of telecommunications systems and cost accounting with aid of highly skilled technician would suffice for on-going operations. The following last section of this summary plan includes the brief discussion on operational phase with a model for cost analysis for on-going operations.

During the end stage project manager will do an summary evaluation of the project PDXTEL. Based on the summary evaluation and ensuring all project related work is completed, the project manager will authorize formal close out procedure. The project manager is responsibly for termination of the project.

Usually termination get little attention as everybody is eager to shift to new projects. This again is the responsibility of the project manager.

Operation Phase:

Operations phase is not a part of Project PDXTEL, but Yosav Telecommunications will operate as services provider for one year as mentioned in the contract. After termination of Project PDXTEL, operation phase is activated. Due the complexity of on-going operations CPM or PERT network technique can not be used here. Moreover operations is not a project.

One of the major operational problem of telecommunications services has been continual demand to change and up-grade the various services offered. Additional to this change in hardware and software every few years cause considerable amount of upheaval in telecom operations throughout industry.

The important time period is the transfer point of Project PDXTEL to operations stage. Certification of testing the entire system is done with new communications manager, project manager PDXTEL and representative from XYZ developers. The system evaluation is primary responsibility of the new manager. The evaluation process is the necessity to quantify and qualify the impact of newly converted system upon the working environment and to determine the system development efforts in terms of tenant and XYZ developers. Lastly, the project engineer will handover documentation of building wiring plan, system manuals, training manuals along with the keys to system room will be given to the new manager.

COMMUNITY GROUP PBXs FINANCIAL MODEL FOR STS or MTCSM

Please note [redacted] (INR-Indian Rupees)

ANNEXURE I.

				Per Ext Per Month
A) Basic cost of Epbx per extension (FCE)	1,800.00			
Number of extension desired	256			
Basic EPABX system cost followimg hardware:			INR460,800.00	
Option:				
- Full Card cage/ Half Card cage	0.00			
- Redundancy/No redundancy	0.00			
- With/without Conferencing facility	0.00			
- With/without Data facility	0.00			
- Operator console Std/printer Ver.,	6,000.00			
EPABX system Sub-total		=	INR466,800.00	89.91
B) Power plant				
- 48 Volts with 6 Amps rating	12,000.00			
- Batteries 12 volt* 4nos, 48Ah.	4,800.00			
Power Plant Sub-total		=	INR16,800.00	3.24
C) Cost one telephone instrument	780.00			
Telephone instruments Sub-total		=	INR199,680.00	38.46
D) Call Accounting System				
- PC-XT system	22,000.00			
- Software	10,000.00			
- Printer 132 column, 180 CPS	16,500.00			
Call Accounting system Sub-total		=	INR48,500.00	9.34
E) Spares Kit consisting the following:				
- 1 set control cards	0.00			
- 1 no C.O. card	0.00			
- 1 no Extension card	0.00			
- 3 no telephone unit	2,340.00			
Spares Kit Sub-Total		=	INR2,340.00	0.45
F) Government Duties and Taxes				
i) 21% Duties + 6% S.T on A	131,917.68			
ii) 6% S.T on B+D	3,918.00			
Duties & Taxes Sub-total		=	INR135,835.68	26.16
G) Packing, Insurance and Freight as % on A+B+C+D+E+F	2.00%			

	P.I.F Sub-total	=	INR17,399.11	3.35
H)	Installation of EPABX,Power plant, MDF and site preperation as % on A+B.	5.00%		
	Installation Sub-total	=	INR24,180.00	4.66
	Telecom System Ownership cost	=	INR911,534.79	175.57

COMMUNITY GROUP PBXs FINANCIAL MODEL FOR STS or MTCSM

ANNEXURE II.

Building wiring:			Rental Per Ext Per Month
Number of wired extension desired	256		
Scope of work includes; - Cable routing - Termination & Distribution box on floor - Instrument terminal block at each extension - Underground cable based on field conditions - Labour charges			
Wiring cost Sub-total/Ext	= 300.00		
Total Building wiring cost	=	INR76,800.00	14.79

COMMUNITY GROUP PBXs FINANCIAL MODEL FOR STS or MTCSM

ANNEXURE III.

Department of Telecommunications Deposites			Rental Per Ext Per Month
Number of C.O lines required	28		
A) OYT deposites @Rs1000/C.O.lines	28,000.00		
B) Security deposites @Rs2500/C.O.lines	70,000.00		
C) Juns Termination charges @300/C.O.line	8,400.00		
Total D.O.T deposites	=	INR106,400.00	20.49

C.O lines - Central office lines or Telephone exchange lines

COMMUNITY GROUP PBXs FINANCIAL MODEL FOR STS or MTCSM

ANNEXURE IV.

Summary of Total Telecommunication System Cost			Rental Per Ext Per Month
A) Telecom System Ownership cost	=	INR911,534.79	175.57
B) Building wiring cost /Ext	=	INR76,800.00	14.79
C) Total D.O.T deposites	=	INR106,400.00	20.49
Grand Total	=	INR1,094,734.79	210.86

COMMUNITY GROUP PBXs FINANCIAL MODEL FOR STS or MTCSM

ANNEXURE V.

Equipment Finance Analysis Parameters			Rental Per Ext Per Month
A) Cost of money (Interest rate)	12.00%		
B) Investment recovery period in years	2		
C) CAPITAL RECOVERY FACTOR (CRF)	0.5917		
D) Depreciation			
- Method	Straight line		
- Salvage value rate on A+B in Annexure I.	10.00%		
Depreciation cost (DC)		INR410,190.66	79.01

Equipment lease cost /Ext/Month = INR210.86

Equit.,lease cost-(BWC+DOTC) /Ext/Mn = INR175.57

COMMUNITY GROUP PBXs FINANCIAL MODEL FOR STS or MTCSM

ANNEXURE VI.

Annual Recurring Expenditure (A.R.E)

			Rental Per Ext Per Month
A) Site office expenses: % P.A. calculated on A+B+C+D in Annexure I			
- Stationary as % P.A.	1.20%	INR9,308.39	3.03
- Utilities as % P.A.	2.50%	INR19,392.48	6.31
- Insurance as % P.A.	2.00%	INR15,513.98	5.05
- Legal Charges as % P.A.	2.50%	INR19,392.48	6.31
- Rent on furniture as % P.A.	0.80%	INR6,205.59	2.02
- Telephone bill as % P.A.	1.20%	INR9,308.39	3.03
- Misellaneous as % on P.A.	2.00%	INR15,513.98	5.05
Total office Expenses as % P.A	12.20%		
Sub-total		INR94,635.29	
Site office area	0		
Site office rent @ Rs/Sft	2.00		
Rent for site office		INR0.00	0.00
Office Expenses Sub-total		INR94,635.29	30.81
B) Manpower costs (M.P.C)			
No.of sites over which costs are apportioned	= 1		
Number of Operators required	3	INR54,000.00	
Operator's monthly pay	1,500.00		
Number of supervisors required	2	INR36,000.00	
Supervisor's monthly pay	1,500.00		
Number of Directors	0	INR0.00	
Director's monthly pay	5,000.00		
Manpower Expenses Sub-total		INR90,000.00	29.30
C) DOT tariff (DOTT)			
i)Annual charge for group Epbx	10,000.00		
ii)Annual line rental tariff	55,440.00		
DOTT tariff Sub-total		INR65,440.00	21.30
D) Service provider charges (S.P.C) % P.A. calculated on A+B+C+D in Annexure I	11.00%		

COMMUNITY GROUP PBXs FINANCIAL MODEL FOR STS or MTCSM

ANNEXURE VII.

A) Equipment lease cost /Ext/Month	=	210.86
TOTAL A.R.E / ExT / MONTH basis	=	188.19
Total Lease cost plus Expense per Extension Per Month		INR399.04
B) Equipment lease cost /Ext/Month	=	210.86
TOTAL A.R.E - (D.C)/Ext/MONTH basis	=	109.18
Total Lease cost plus Expenses minus Depreciation per Extension Per Month		INR320.04
C) Equit.,lease cost-(BWC+DOTC) /Ext/Mn	=	INR175.57
TOTAL A.R.E - (D.C)/Ext/MONTH basis	=	109.18
Total Lease cost -(BWC+DOTC) plus Expenses minus Depreciation per Extension Per Month		INR284.75