

emerontl 1

esckepménbeckvTüa

I-eKa lbNgénemeeon

eRkaYeB lbBabemerontl1 Ed l CaCBkcabepménemeronenH nsStngGacy l nvcncmycnndcxag
eRkam³

- ✓ GEEd lehAfa beckvTüa?
- ✓ l kN³xsKarvagvTüasaRs ng beckvTüa
- ✓ ehtGca)acskSaBbeckvTüa?
- ✓ etmxgarrbsbeckvTüamanGxH?
- ✓ etkarvténbeckvTüa CH\TB l d l sgm ngesdkcdcemcxH?
- ✓ etbeckvTüaEckCabnan?
- ✓ etBaküfakarRKbRKgbeckvTüamannyfadcemc?

II-esckepm

karERbRb l énbeckvTüa KCaRbPBmydcbgénkarERbRb l esdkc. manbNa l RbeTsmycnn
]TahrNdcCa RbeTskmCaeygCaedmenABTanmansmtPaBRKbRKan srabeFkarbE l gvTüasaRs ng
beckvTüaeTACakarbegtG²f²srabBaNCKmenAeLyeT. esdkcrbsRbeTsenABgEpkyagxag
eTae l l FnFanFmCat kskmyfap l ng]sahkmFntc Ed l)anmkBkarnac l nvbeckvTüaBl
breTsdcenHkarGPvD\neSDKckenAmankrtytyav kgxN³Ed l bNa l RbeTseCOne l OnCaeRch)an
ylfap l tp l ngesvakmEd l EpkeTae l beckvTüa ngvTüasaRstv)aneKcatTkCacncsxanén
kareFeGayesdkcmankarrikcerinenAKgmCAdanRbktRbECge l lTpSarGnrCat.
e l sBenHeTaeTotedaySarkarekneLgénsak l PavnykmBaNCKm RBEdnénkarRbktRbECgrtv)an
eK l beca l Cabenir²edaybNa l RbeTsmycnnedlm,JeFeGaykareFBaNCkmkanEtmanPaBFT l ay
ngkarRbECgxs. kgsanPaBEbbenHetRbeTsTnexSaYxagEpkesdkc EpkbeckvTüadcCarbeTs
mycnnkgGaSRtveFGxHedlm,TbT l eTAngbBaaRbQmTagenH. enAkgesdkc]sahkmkarRbkt
RbECgCaktasxanbpténkarrsranrbsRkmhndcenHkarrkrkvTFatedlmEd l manté l efakkareRbl

R)asklagB l kmEd l manté l Tab karc l eTAd l PaBCama sénpl tkmbbeckvTüa ngkarc l eTakan kabTipSamneK KCaktaCr j eTarkPaBeCaKCy. karRKbRKgbeckvTüa karécrbDt ngkarRKbRKg Btman)anka yeTACaKnHmydsxanénPaBeCaKCyk gkarRbktRbECgkgstvtST21enH. sBéfenH manshRKasCaeRchenAe l BPBe l akcabepmrkrkkarécrbDtEbbbeckvTüa tamry³karTT l cenHdg BxagerKa ngkarGPvDfenedayxnÉgedm, l beginTipSarbsBkeK. srbmkkarRKbRKgkarvtrbs beckvTüa)anRtmRtv)anka yeTakarBcarNadsxan srabkarGPvDfRbeTs kdcCakareFeGayGgPaB mymankNsm, tkgkarRbktRbECgpgEdr. smcgcafabbeckvTüaGacbegteGaymanpl tkm ng esvakm É pl tkm ng esvakmGacbegteGaymanTipSar ÉTpSarGacbegteGayman]sahkmepSg² É]sahkmenaHngRsbykR)akcN l ngtrvkark lagB l kmkanEteRcn.

III-niymnybeckvTüa

beckvTüasedAeTae l l ra l cenHdgTagLay ra l pltp l ra l teNrkara l]bkrN ra l vFl ng RbBnepSg² Ed l Rtv)aneKeRb edm, l begtCap l tp l ng esvakmepSg²pl eTAGtfCn .

‘All the knowledge, products, processes, tools, methods, and systems employed in the creation of goods or in providing services. [MOT, Tarek M. Khalil p.1]’

beckvTüaKCakareRbR)as vTüasaRs ng vskm edm, l begtCamaSn ng TrgkarepSg² kgkareFeGay RbesireLgnv l kxNrsenArbsmnsS byagehacNas beckvTüaGaceFeGay mnsSeFkckarepSg² RbkbedayRbsTPaBxsCagmn.

‘The application of science and engineering to the development of machines and procedures in order to enhance or improve human conditions, or at least to improve human efficiency in some respect. [IT Dictionary]’

beckvTüaKameFüa)aybeckeTsepSg² Ed l mnsSeRbedm, eFeGaymCAdanCv j xnkanEtRbesireLg.

‘Technology is the technical means people use to improve their surroundings.’

]TahrN beckvTüakBüTr masine)akexaGav masnftc l g masnbmTk ynehaH k)a l

meFüa)ayTnakTngedayKaneRbExS ng KaneRbExS . l .

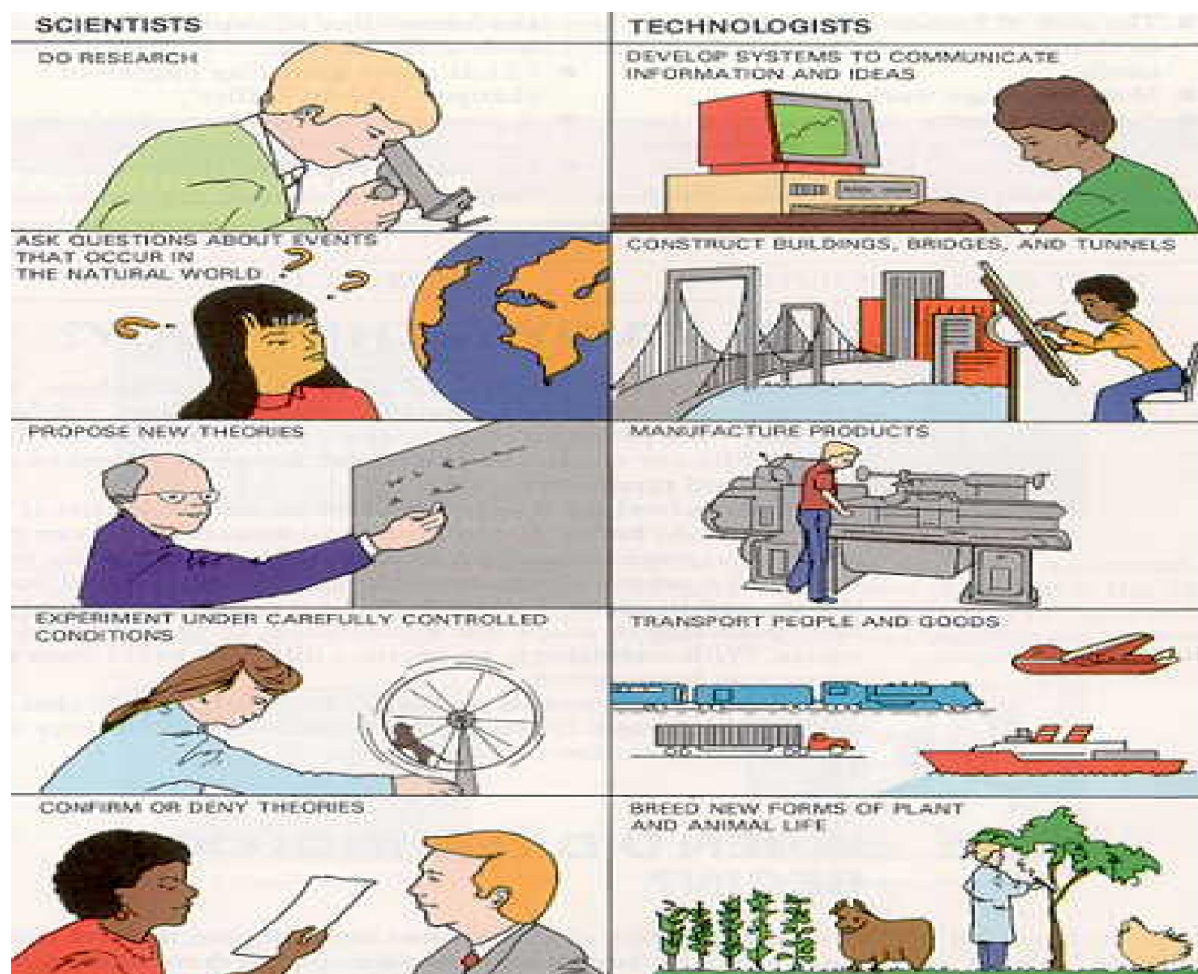
l kN³xSkarvagvTüasaRs| ng beckvTüa

vTüasaSSsedAeTAe lkarSKSaBFmCatpSg² faethtG)anCavaYagdech . ÉbeckvTüa
sedAeTAe lkareRbR)ascenHdgepSg² edm,lbE l gFnFanepSg²eTACa p ltp l ng esvakm Ed lCa
esckRtvkarrbssgm.

vTüasaSTakTgeTAng ·karyl dgBGmy· ÉbeckvTüaTakTgeTAng ·kareFGmy· .

vTüasaS ng beckvTüamanTnakTngKa ehYc³\TB l d l karsenArbsmnsSRKb²Ka.)annyfa

vTüasaSCaGkrkeXl jRTsGmyehy beckvTüaKCaGkbE l gRTsenaHeTACa p ltp l ng esvakm
Ed lCaesckRtvkarrbsmnsSv j .



ehtGca)acskSaGB l beckvTüa?

beckvTüaRtv)anmnSSerBltagBmnSScabkenittbgmkemH. mnsS)anrHrkvFdaedmeQ
begltvFcGnGahar ebHEpeQEd l enAXs² sgCrk vFykQHngFmCat ngvFepSg²eTotCaeRch

edlm,leFkarEk l GrCvPaBrseA kdcCaedlm,leFeGaykargarEd l xneFmanPaBgayRs l ngman
RbSTPaBCagmn. Etsrabbcb,nmnsSmnRtmEteRblbeckvTüaedlm,leFeGaylkxNénCvtkanEt
RbeslrngsbrEbbenaHeT eKcabepmeRblbeckvTüaedlm,lbegitnvmxCn j CaeRcinedayp l tCap l tp l
ng esvakmepSg² ptpgeTakanTtpSarEfmeTotpg.]TahrNman Lan ynehaH kBüTr masineRb
kgeragcrk bNa j Internet kmvF(Software)epSg²CaeRcneTot. dceHvamansar³sxanbptsrab
GkRKbRKgna**stvt**ST21kgkarskSaeTae l lkarERbRb l ngkarGPvDænbeckvTüaerBaH³

- beckvTüaGacbe l gvtFatedmepSg²eTACap l tp l ngesvakmsrabbeB j trvkar
rbsmnss
- beckvTüaCameFüa)ayEtm y ngxsanbptEd l GaceFkarEkERbteNlvtrbsmnssCat
eGayRbesreLg
- beckvTüaCa]bkrNmyd l sxankgkarbegitKNsm,tkgkarRbktRbECg

]TahrN FnaKar ANZ Royal, Microsoft Corp

trnaTrbsbeckvTüa

- beckvTüamanTnakTngd l kareFeGayRbesreLgénkrtCvPaBrbsmnssCat
- esdkcrbsRbeTsnana b]sSahkm bmxCn j nanamankarrikcerinKGaRsyetAe l l
RbSTPaBénkarRKbRKgeTae l lbeckvTüa
- beckvTüaGacbegitRTBüsm,t tamry³karbegtkargareGaymnss begitTtpSar^{f2}srab
kareFBaNCkm.

Technology ==>create Products/Services==> Create New Markets==> Create
New Industry ==>Create New Job ==>Create New Income & Need Labors

- mxgarrbsbeckvTüamnRKanEtedm,GPvDænvaenaHeT vaKCaKnHd l sxankgkarQaneTA
rkPaBeCaKCyenkarRbktRbECgpgEdr .

IV-beckvTüa ngGaCvkm

•Pool of knowledge available to society

RKbGgPaBTagGsmanka l bNgrbsBkeEtm yKtKedlm,serceKa l edAepSg²rbsBkeK.

GgPaBTagLayeTaHCa Non profit or profit organization Rtv)aneKcatTkfaCaGgPaBp l tkm

TagGsEd l p l tkmkgnyenHsedAeTae l lskmPaBTagLayénkarbe l gFnFanepSg²eTACap l tp l

b esvakm. FnFanTagenaHGacCa FnFanFmCat FnFanmnsS ngFnFanepSg^{2e}TotCaeRch. GgPaBGaCvkmmYRtv)aneKbegteLgedm,lrkR)akcn l (Profit). karRbm l nvKntbcenHdgEd l manRbeyacnc l eTakansgmKCaFnFanmydsxankgkarbegtGaCvkmm.

•Technology adds value to the assets of a company

beckvTüaEd l manenAkgrkmhnmYRtv)aneKehafRTBübeckvTüarbsRkmhnenah. RTBüTagenaH vaektmaneTae l lbK l k CaRTBüGrbiyenAkgrkmhnaGacCa Hardware, Software, Brainware, and Know-How . enAGttka l té l rbsGaCvkmmYeKKtFbpteTae l EtRTBüFnmycnndcCa l y d l Gkar LanCaedlm . bEnbcb,n karvayté l eTae l l RTBüFnrbSGaCkmRtv)aneKbkbBa l Tag beckvTüarbsRkmhned l manpgEdr. eRBahvaCaRTBüFndsxanmyEd l c l rmcEnkbegtp l cen j d l Rkmhn ng CaGavFkgkarRbktRbECgpgEdr.

]TahrN té l rbsRkmhn Netscape, Microsoft ng Google ...Rtv)anKtrab l and l aGaemrc

•Conversion of resources into goods and services

teNlkarGaCvkmmKsedAeTae l l skmPaBed l eFkarbE l gFnFanepSg^{2e}TACa p l tp l ng esvakm. Technology Rtv)aneKerbedm,lFeGaytenirkarbE l genHmanRbsTPaB.]TahrNkarbegteGayman Process xCagmn e l OnCagmn ngcnaYéfedlmtcCamn.

V-karcatfakbeckvTüa (Classification of Technology)

manÉksaCaeRchRtv)aneKbegteLgkgkarcatfakeTae l l Technology . xagerkamCakarEbgEck Technology mycnn³

•New technology

KsedAeTae l l beckvTüaEd l eKeTlbbegtf l b Ed l eTbykeTaeRbR)askgGgPaBmyehy beckvTüa enHC³TB l yagxagd l tenirkarp l t b p l esvakmrbs GgPaB.]TahrNkmvFKsbgkgkBüTr vaeFeGaymankarpasbrd l kargarEd l vskrBmnKs ng KNnaedayéd.

•Emerging technology

KsedAeTae l l beckvTüaEd l mnTanykeTaeRbCaBaNCkmeB j e l j enAeLy bEnvaGacngRtveRbl kgryHeB l xagmx (5qabnab).]TahrN beckvTüaEd l eKeRbkgvsyeBTümycnn ng beckvTüa Nanotechnology, 3G Phone Caedlm.

•High technology

KsedAeTae lbeckvTüaEd lTenb ngPaBéyqat . Baküfa High technology Rtv)aneKeRbR)aseday
]SahkmF²epSg² tam lkn³edayELk². RkmhnEd lEKcatTkCa High technology e laHRtaman
lkn³mycnndcxagerkam³

- eRbR)asbK lksTEtmancenHdgxs . bK lKPaKeRcnCa vskr ng GkvTüasaRs
- beckvTüaEd lEKerbmankarpasbryaggabrhs CagRkmhnepSgeTot
- RkmhnRbQmmxng Technological Innovation Canc
- krténkarcnayeTae l Research and Development XS

•Low technology

KsedAeTae lbeckvTüaEd lgayRCabc lETAsgmmnsSmycEnkF. RkmhnEd lEKcatTkCa Low
technology e laHRtaman lkn³mycnndcxagerkam³

- eRbR)asbK lKEd lmancenHdgTab bKanCna j . bK lKPaKeRcnCaGkeRbk l ag
- RbBnRbtbtarkgRkmhnPaKeRcneRbR)asedayéd b BakNa lédngmasin
- beckvTüaEd lEKerbmankarpasbrtctc
- krténkarcnayeTae l Research and Development TabbesrEtKan

•Medium technology

KsedAeTae l krtbeckvTüaEd lstenAcenaH High and Low Technology.
CaTeTAcBaH]Sahkmrfyn b pltp lERbR)asRbcaéf.

•Appropriate technology

KsedAeTae lbeckvTüaEd lRtv)aneKeRbR)assmRsbeTAngFnFanEd lman. mannyfakareRCs
erlsbeckvTüaeGayRsbTAngFnFan ng lTPaBrbsRkmhn.

VI-karRKbRKg (Management)

karRKbRKgsedAeTae l s l, ³énkarGnvtGaCvkm. vaBakBneTAngkardkna ng karRKbRKg GgPaB
edlm,eqaHeTakarserceKa ledA.

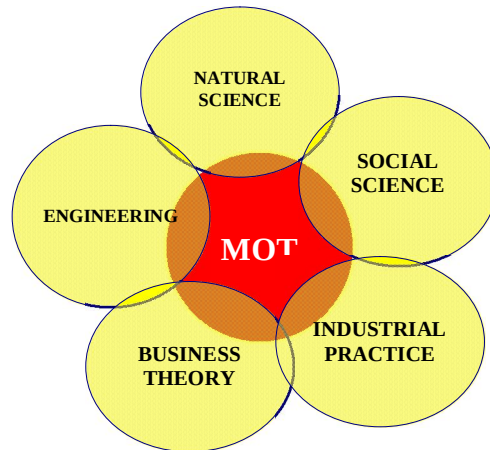
Planning à Organizing àLeadingà and Controlling TagenHKCamxgarrbsGkRKbRKg
enAkGgPaBmy. karRKbRKgGacCabeckvTüamyEdr eRbaHCavFEEd l mnsSrkrkedlm,eFyagNa
eGaymanRbsTPaBkgkarserceKa ledArbsRkmhn .

What is Management of Technology?

karRKbRKgbeckvTüaKCaEpkmYEd l man l kN³CaGnrmxvCa (mxvCabcenHdgeRcnEpK) GaceFkar bBa l Karvag vTüasaRs vskm ng cenHdgénkarRKbRKg ng karGnv t.

‘MOT is an interdisciplinary field that integrates science, engineering, and management knowledge and practice. [MOT, Tarek M. Khalil p.7]’

karRKbRKgbeckvTüaepaTeTae l kktamYEd l sxankgkarbegtRTBüsm,t KktabeckvTüa.)anny famanktaclrmCaeRcneTotkgkar egtRTBüsm,t. karRsavRCav karbegtft ng karGPvD/nKCa smasFatsxan² kgkarbegtRTBüsm,t.



An interdisciplinary field

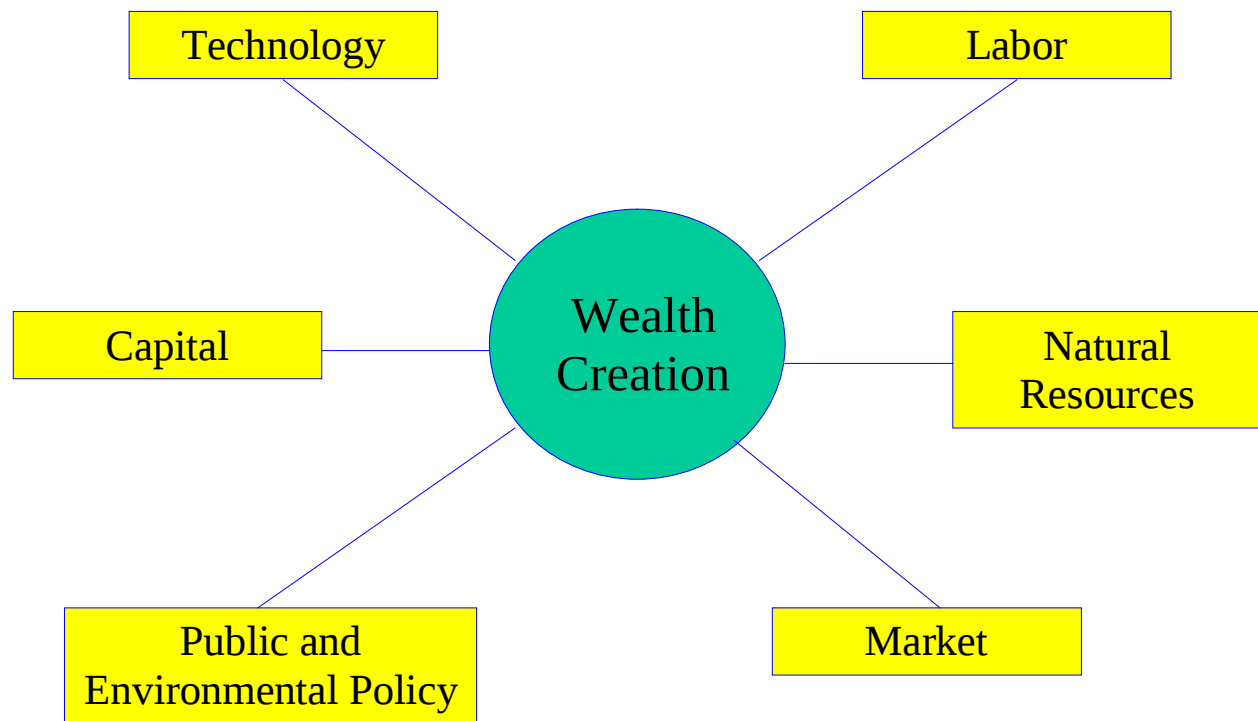
nymny MOT

karRKbRKgbeckvTüasedAeTae l karerobc ng kareRbR)asnvmeFüa)ayepSg²Ed l Caesck Rtvkarca)ac rbsGgPaBedm,sercnvTsedAesdkc ngsgmtamry³rbkKehljbeckvTüa.

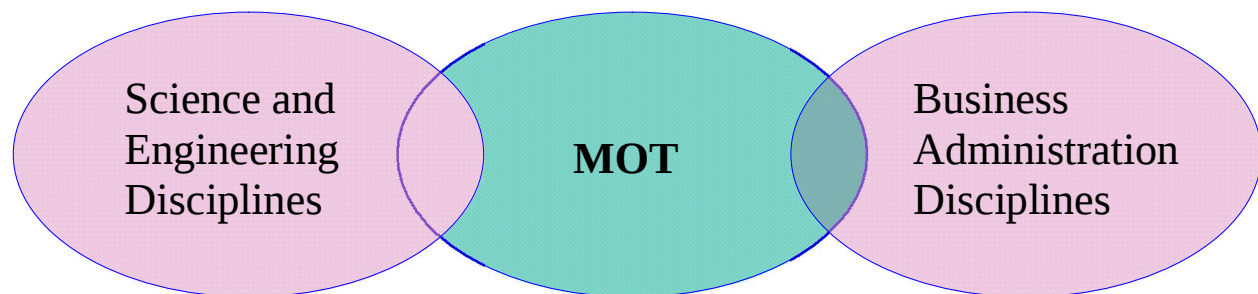
‘Management of technology refers to the design and use of the means needed within organizations achieve economic and social objectives through technological innovation.’

vaKCa Cna j rbsmnsS rmbBa l Camy FatpSg²rbsvskm vTüasaRs ng vFsaRskgkar RKbRKgEd l CaesckRtvkarrbsGgPaBedm,eGayBkeKGacbeB j smtPaBbeckvTüa ngbegnyTvF beginKNsm,tkgkarRbktRbECgrbsBkeKeTAkgTipSar.

It is a human skill, combining elements of engineering, science and management techniques, which is needed by organizations in order that they may fulfill their technological capabilities and thus maximize their strategies and competitive advantage in the market place.



Factors Contributing To Wealth Creation



Core knowledge needed for MOT

trnaTrbs MOT (The roles of MOT)

karRKbRKgbeckvTüap leGayRbeTsmY b RkmhnmYnvce ly Ed l mansnrdcxagerkam³

- ✓ etRtvbegitbeckvTüaedaYreboNa?
- ✓ eteKGacTa jYkp l BbeckvTüakgkarbegit»kasBaNCkmedaYreboNa?
- ✓ etRtveFkarrmbBa l rvagbeckvTüangyTsarSaBaNCkmedaYreboNa?
- ✓ etRtveRbbeckvTüaYagdemcedm, l beginKNsm, tRbktRbECg?
- ✓ etbeckvTüaGaceFkarEk l GrPaBSKsa jénRbBnp l tkmg esvakmyagNaxH?

✓ eteB lNaRtveRCserls b e)ahbgeca lbeckvTüamy?

VII-sk le lakkgeB l bcb,ni (The World Today)

vaCaktadca)acbpTEd lRbeTsmY bRkmhnmYRtvEtKteTae lkarRKbRKgbeckvTüaeRBaHsk l
e laksBéfman l kN³CaeRchxsBsk le l akB10 b 20 qamn. xageRkamCacnmcYcnnEd l Kr
BcarNa³

✓ karERbRb l ngkarekteLgnvbeckvTüa fyagqabrhs (The pace of technological change)

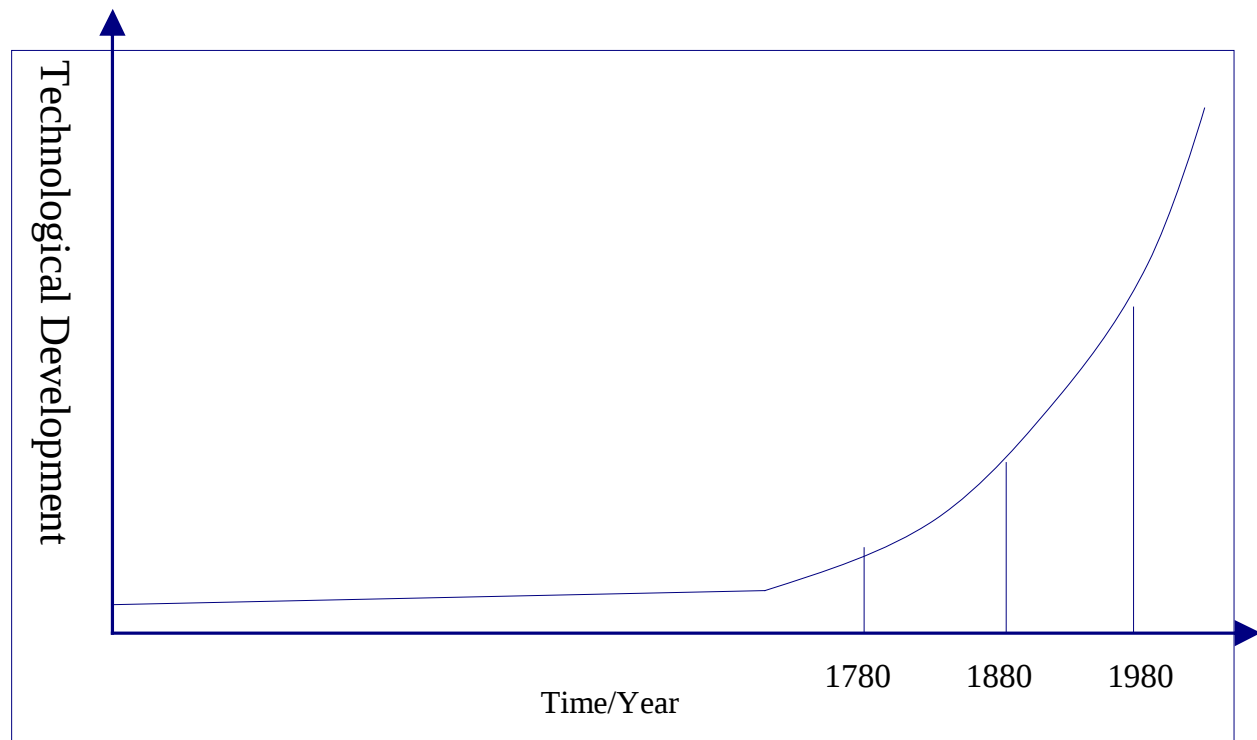
✓ karpasbr\ryabTTipSar (The change in scope)

✓ karpasbreTae lkarRbktRbECg (The change in competition)

✓ karbegteGaymantbnBaNCkmesrirsbsbNaRbeTsmYcnn (Trade Blocs)

Rate of Technological Change

BmYqaeTAmYqabeckvTüaf²Rtv)aneKp l teLgedm, trvkarrbssgm ngedm, CnsbeckvTüaEd l
hssmy. PaBrhsénkarvtbeckvTüaf²)aneFeGayRkmhnB)akngrkeXl j PaBQHrbsxngg
EfrkSaPaBQHenaHeGaymannrnPaB)aneLy.



karpasbr\ryabTTipSa (Change in Scope)

edaysarkarrkcerinrbsbeckvTüa \ryabTenAkgTipSarkanEtmanPaBSKsa j ng karrBgTk
rbsGkeRbR)asp ltp l besvakmkanEtxs. GtfCnsBéfRtvkarBcarNaeTae l lCerlsCaeRch
ehiyKNPaBKCaktacbgEd l eKykctTkda kbpt.

karpasbreTae l karRbktRbECg (Changes in Competition)

RbeTsGaemrcFabCaRbeTs Ed l man]sSahkm l t l asbptkgst>18-19 eB l enaHGaemrc
mankarRbktRbECgtctcenAeLyBRbeTsdéT EtsBéfGaemrcRtvRbQmmxkgkarRbktRbECg
CamyRbeTsEd l mankarrikcerinEpK]sSahkmCaeRch dcCa³

v Germany, Japan

v Taiwan, Korea, Singapore, China

bkBaNCkm (Trade Blocs)

RbeTsCaeRch)anchkcRBmerBogedlm,begitCabkBaNCkmesrl. bkBaNCkmmmandcCa³

v European Union (EU)

v Pacific Rim countries

v General Agreement on Tariffs and Trade (GATT)

v North American Free Trade Agreement (NAFTA)

v Asia Pacific Economic Cooperation (APEC)

Rbeyacnrbs bkBaNCkmesrmandcCa³

v b)atrnsdkc katbnyBnnac l ngnaec j

v eRbR)asRbBnrbybNvtrm

v beginTipSareGayFCagmn

v beginkatBkceGaymnsS

v rbrmngCyKarvagRbeTsmyeTARbeTsmykgshKmn

ebinyayBkarRbktRbECgv j bkBaNCkmesrl KCakarbegitnvTrgfénkarRbktRbECg .

]TahrNGaemrcmnEmnRtmEtRbktCamyRbeTs)aragEtmyenaHeT eKRtvRbktRbECgCamybNa l
RbeTsGrbTagLayEd l stenAkgshKmnGrb (EU)Etmg.

VIII-karRKbRKgbeckvTüangTssnshRKn (Management of Technology: an entrepreneurial perspective)

beckvTüamnEmnCaGkbegitBaNCkmenaHeT tamkarBtKkareRbR)asbeckvTüaeTEd l naeGayman
BaNCkm ehikyareRbR)asbeckvTüaTagenaH)anmkBskmPaBénshRKnTagLay. skmPaB

esdkcNakedayEtgEtRtvkar “ Paper Entrepreneurs” ng “Product Entrepreneurs” .

Paper entrepreneurs sedAeTae lRkmmnsSed lmancentHdgEpkc,ab hrBavt KNenyü
 . l. ehnyeFkarkgskmPaBdcCa Establishing joint ventures, holding companies, finding tax
 shelters, investing in commodities; encouraging in buying and selling notes, bonds; and
 privatization, going publish, etc.

Product entrepreneurs- sedAeTae lRkmmnsSCa vskr b GkvTüasaRSed l kargarrbsBk
 eKBakBneTae lEpkp ltkm bCaGkRsavRCav Gkrcaec j mtp l tp l bCaGkRKbRKgp ltkm
 GkCn j kgkarp l tCap l tp l Ed l CaesckRtvkar rbsTpSar. l .

BkeKCaécGkRbDtp l tp l eday³

- begtp l tp l Ed l l Camyngté l efak
- naykbeckvTüaf²eTAgRkmhn srabkarp l t Eckcay ng
 l kRbkbedayRbsTPaB
- EsgrkRbPBGkptpgEd l manté l Tab EsgrkTipSar^{f2} ng
 skSaBesckRtvkarrbs GkeRbR)as
- p l karbNHbNa l l^{2d} l bK l k epateTae l lkareFkarpSBpSa^{yp} l tp l ng
 beginTnkct ng esvakmrhsd l GtfCn.

CaTeTA Paper entrepreneurs manCna j eTae l l karcatEcgm l Fn ng CaGksrbsr l eTae l
 Rkm Product entrepreneurs. Paper entrepreneurs CaGkEktRmv ng EkTrg eTae l ltrvkar ng
 karptpg EtBkeKmnGacBRgk Economic Pie)aneT . manEtRkm Product entrepreneurs eTed l
 GacBRgk Economic Pie)an.

edml,EfrkSaeSrPaBesdkcrbsRbeTsm^yeygRtvkarCadacxatnvRkmshRKnTagBrRbePT.
 v tamRbvtsaRsenATsvtS 80 RbeTsGaemrc)an)atbgnvPaBCaGkQanmxek kgEpkl]sSahkm
 eh^yRbeTsCbnEbrCaGknmxv j edaysarGaemrcmn)aneFkaGPvD/EnRkm Product entrepreneurs
 eGay)anRKbRKan TbT l ngkarRbQmEpkl]sSahkmCask l . sBéfbNa l RbeTs ASEAN
 mycnn (e l kE l grbeTs Singapore) kBgCbnwbtkgkarGPvD/nesdkc edaysarBk eKxHRkm
 Product entrepreneurs Ed l mansmtPaB .

“The bubble economy has burst! Sustainable development of industry is not possible without our own technological capability.”

tamkarkntsKa lra lRbeTsTagLayEd l mankarQanmxEpkebeckvTüa EtgEtmankrTcVPaBrsenA

(Higher GDP/capita) XS ng manPaBxagT l eTA Economic shocks.]TahrN USA, Japan,

Germany, France, Switzerland, Singapore, South Korea, Caedm .

ehyrtamkarRbeml l eml l ceBaHRbeTsTagLayEd l Büayambegin GDP/Capita edayrBR)aS

FnFanFmCat ng karBgEpke l s l beTae l k l agB l kmEd l KanCna j GacngCbvbteTAéfGnaKt .

Example-Saudi Arabia, Zambia, Thailand, Bangladesh, Sri Lanka, Cambodia, etc

√dcenHsBéfmanEtmeFüa)ayEtmybeNaHedml,GPvD:n RbeTsb RkmhnTagenaH KRtvbegt Rkm

product entrepreneurs Ed l GaceFkarCamyRkm paper entrepreneurs eGay)anRKbRKan edm, l GnvT

karGPvD:nRbkbedaycrPaB (Sustainable Development) . nyayedaYxImanEtKarRKbRKg

beckvTüaETed l Gacbegt “Product Entrepreneurship” .

snidan

beckvTüaKCaKnHdBessEtmyKténBPBe l akdeCOne l OnenH . mnfamanGkKaRTbKanenaHeT man

EtKarRKbRKgbeckvTüaRbkbedayRbsTPaBeT CacncdsxansrabPaBeCaKCy ng karrsranrbs

Rkmhnmy bRbeTsmYkgkareFeGayesdkcrkcerin. bBaaenARtgfaeTtveFkarbkRsaYkarRKb

RKgbeckvTüayagdemceTAngkarGnvTcakEsg ‘The issue is how we can interpret “management

of technology” in practical way.’

snrBPakSa

1-tamry³karcatfakbeckvTüaEd l)anbkRsayBnü l kgemeronxage l l crp l]TahrNxH²

énRbePTbeckvTüanmy² .

2-etImanRkmhnNaxHEd l Rtv)aneKcatTkCa High-Tech Corporation enAe l sk l e l ak ?

3-crGanngvPaK Case Study “World Around Us”