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Policies to Promote an Enabling Environment for a Knowledge-based Economy in Palestine and Jordan

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Prepared By
Fause Ersheid, MAS, Palestine
Amer Jabarin, RSS, Jordan

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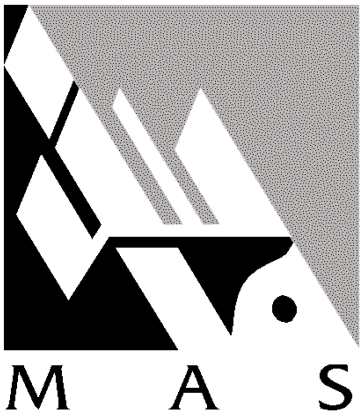

Palestine Economic Policy Research Institute

'Policies to Promote an Enabling Environment for a Knowledge-based Economy in Palestine and Jordan'

Prepared By:
Fause Ersheid, (MAS)
Dr. Amer Jabarin, (RSS)

Reviewed by: Dr. Sabri Saidam

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Résumé

Cette étude explore le potentiel de développement des économies palestinienne et jordanienne en économies du savoir, en utilisant comme référence les quatre piliers de l'économie du savoir définis par la Banque Mondiale : une population bien éduquée et créative, une infrastructure de la télécommunication et de l'information performante, un climat institutionnel propice à l'innovation, et un environnement économique et légal favorable aux entrepreneurs. Cette étude a nécessité une ample revue de la littérature locale et internationale traitant de l'économie du savoir, et une série d'entretiens peu formalisés avec les responsables de gouvernement et les acteurs essentiels du secteur privé. Une analyse des économies palestinienne et jordanienne pour chacun des quatre piliers de l'économie du savoir est disponible ci-dessous.

Piliers de l'économie du savoir en Palestine

Le capital humain

La valeur du capital humain est en constante amélioration en Palestine comme le montre un certain nombre de facteurs tels que le taux élevé d'inscription en écoles secondaires, l'augmentation du taux d'alphabétisation, l'amélioration des programmes scolaires, et l'introduction des technologies de l'information et de la communication (TIC) dans les écoles. La population active palestinienne s'élève à environ 2,142,000 selon le Bureau Central Palestinien des Statistiques (PCBS) (T4, 2006). Environ 72% de cette population est salariée, et 28% est au chômage (définition OIT). Les statistiques démontrent que la probabilité d'emploi est significativement corrélée au nombre d'années d'études réalisées.

Le nombre total d'élèves inscrits en école primaire atteignait 953,621 pour l'année académique 2005/2006; 70% d'entre eux en école publique, 6% en école privée, et 24% dans les écoles gérées par UNRWA. De plus, 124,867 élèves sont inscrits en école secondaire; 96% d'entre eux en école publique, et le reste en école privée. La quasi totalité des moins de 12 ans est scolarisé, et les statistiques démontrent la parité des sexes dans la fréquentation scolaire. Durant les cinq dernières années, le pourcentage d'élèves d'école primaire passant en école secondaire a dépassé 90%; et environ 80% des élèves passant leur *Tawjihi* (Baccalauréat) poursuivent leur études dans l'enseignement supérieur. Toutefois, la récente expansion du secteur secondaire s'est faite de manière inégale entre les sciences, les lettres et les formations professionnelles. En effet, les inscriptions dans les programmes scientifiques et professionnels diminuent continuellement, alors que les inscriptions dans les programmes littéraires ont augmenté de 2% depuis l'année scolaire 1999/2000. Ainsi, environ 75% des élèves qui passent le *Tawjihi* étudient les lettres.

En ce qui concerne l'enseignement supérieur, il est à noter que 55% des étudiants sont inscrits dans des universités traditionnelles, alors que 33% sont inscrits dans des programmes de formation à distance de l'université d'Al-Quds (Al-Quds Open University). Les programmes relatifs au domaine de l'éducation et des sciences sociales et commerciales se sont récemment développés, alors que les inscriptions aux programmes scientifiques techniques et liés à l'ingénierie ont décru. Le nombre total d'inscriptions dans les universités à vocations professionnelles reste faible; il est passé de 3000 en 1999/2000 à 5561 en 2004/2005. Cette faible proportion est liée au fait que les formations professionnelles ne sont pas aussi prisées que les formations traditionnelles dans la société palestinienne. En l'an 2000, un certain nombre de réformes ont été introduites dans les programmes scolaires palestiniens: la Palestine est devenue le premier pays arabe à enseigner la langue anglaise dès la première année de l'école primaire

('1st Grade'); les sciences technologiques sont devenues obligatoires à partir de la dernière année de l'école primaire ('5th Grade') et jusqu'à la fin de la scolarité ('12th Grade'); l'économie domestique, l'environnement et la santé ont été introduites comme matières facultatives en école secondaire ('Grades 7-10'); une troisième langue étrangère facultative a aussi été introduite; enfin, l'économie et la gestion sont apparues en tant que matières dans les programmes des deux dernières années de l'école secondaire, aussi bien pour les filiales scientifiques que pour les filiales littéraires ('11th –12th Grade').

En dépit des efforts louables du Ministère de l'Education et de l'Enseignement Supérieur, (MOEHE – Ministry of Education and Higher Education) pour améliorer la qualité et l'étendue des services éducatifs en Palestine, le système éducatif palestinien conserve une approche basée sur la mémorisation, et qui met l'accent sur la connaissance descriptive et la théorie abstraite plutôt que sur l'apprentissage cognitif et l'analyse critique.

Les TIC ont récemment été introduites dans les programmes scolaires, et actuellement, environ 50% des écoles primaires et secondaires ont des salles d'ordinateurs, et 70% ont une connexion Internet. Récemment, Paltel (la Compagnie de Télécommunications Palestinienne) a signé un contrat avec MOEHE dont le but est de connecter 150 écoles par an jusqu'en 2015. De plus, 54% des écoles ont des bibliothèques, et 50% ont des laboratoires scientifiques. Bien que le taux d'illettrisme dans le Territoire palestinien ait progressivement baissé, il reste plus élevé chez les femmes que chez les hommes. Cependant, le taux d'illettrisme chez les individus âgés de 15 ans ou plus est passée de 15.7% en 1995 à 6.5% en 2005. Les dépenses budgétaires dans le domaine de l'éducation ont constamment augmenté ces cinq dernières années, et les fonds privés représentaient environ la moitié du total des dépenses. Le total des dépenses est passé de 7.5% du PNB en 2000 à 11.5% en 2003.

Le nombre de formations professionnelles dispensées sur le lieu du travail sont limitées. Très peu de compagnies offrent ces formations à leurs employés; elles sont encore considérées comme superflues et couteuses.

Innovation

Le domaine de la recherche et du développement (R&D) en Palestine est peu développé et souffre de plusieurs lacunes. Les recherches sont peu nombreuses, de mauvaise qualité, et beaucoup d'entre elles n'ont pas d'objectif spécifique. Cependant, des efforts ont été produits pour améliorer le secteur de la recherche dans le Territoire palestinien, et une stratégie nationale pour la science et la technologie a été rédigée. Elle n'a cependant pas encore été mise en pratique.

Les activités de recherche dans le Territoire palestinien se caractérisent par une prédominance du rôle des ONG par rapport à celui des universités. En effet, la majorité des projets de recherche s'inscrivent dans le domaine des sciences sociales et du développement, et seulement 5% de tous les projets de recherche effectués jusqu'en 2002 peuvent être qualifiés de scientifiques. Les ONG sont responsables de la plus grande partie des projets de recherche, qui traitent généralement de questions relatives à la démocratie, aux droits de l'homme, au développement et aux problèmes sexo-spécifiques. Une autre partie de la recherche palestinienne est produite par le gouvernement et ses ministères; ces projets de recherche sont souvent de moindre qualité, et traitent communément d'un secteur particulier ou bien de questions auxquelles un certain ministère porte un intérêt immédiat. Les universités locales mènent aussi des projets de recherche, mais ceux-ci sont peu nombreux en raison des limitations budgétaires du milieu académique. Selon les

dernières estimations, seulement 0.75 publications seraient produites par chaque université chaque année.

Le domaine de la recherche en Palestine fait face a de nombreux obstacles: la "fuite des cerveaux", le manque de chercheurs qualifiés dans certains domaines spécialisés, la précarité de l'emploi dans ce secteur, le manque de coopération et de coordination entre les différent centres de recherche, une insuffisance de fonds alloués à la recherche, et le peu d'attention accordé à la question des droits de propriété intellectuelle.

Infrastructure des TIC

L'infrastructure des TIC dans le Territoire palestinien s'est considérablement améliorée, particulièrement après l'avènement de l'Autorité palestinienne. Paltel a été établi en 1997 afin de développer les lignes fixes, et en 1999, Jawwal a commencé à fournir des services de téléphonie mobile. Après l'arrivée de Paltel, le nombre de lignes fixes en Cisjordanie et dans la bande de Gaza est passé de 80,000 en 1996 à 341,330 en 2006, avec un taux de pénétration de 9%. En 2006, 545 localités au sein du Territoire palestinien étaient couvertes par les réseaux de téléphonie fixe, ce qui représentait 98% de la population totale. De plus, le nombre d'abonnés au réseau Jawwal a dépassé 820,000 la même année. En avril 2005, Wataniya International est devenu le deuxième fournisseur de téléphones portables en Palestine.

Selon les statistiques de PCBS, 32.8% des foyers palestiniens disposent d'un ordinateur, et 15.9% ont accès à Internet. De plus, 51% de la population âgée de 10 ans ou plus utilise régulièrement un ordinateur, et 18.4% utilisent Internet. De plus en plus de foyers (15.3%) utilisent une connexion ADSL mais la majorité (68.5%) utilisent encore une connexion bas débit. En juin 2007, le nombre d'abonnés ADSL a dépassé 40,000, avec un taux de pénétration de 12.6%. De plus, la Palestine compte maintenant plus de 300 cybercafés. Les palestiniens ont même introduit une nouveauté dans le commerce du cybercafé: les cafés exclusivement réservés aux femmes.

Le prix des services de télécommunication en Palestine reste relativement élevé par rapport aux pays voisins. Les mêmes services sont fournis en Israël pour un tiers du prix palestinien. Le nombre total de compagnies informatiques dans le Territoire palestinien est estimé à 150. Le secteur employait entre 4,000 et 5,000 professionnels en 2005.

Le nombre de centres culturels en Palestine est relativement bas: 174 centres culturels, 5 musées, 14 théâtres, 31 bibliothèques publiques. Cependant la Palestine possède une forte concentration de chaînes de radio et de télévision pour une population si restreinte, avec 23 stations radio et 24 chaînes de télévision.

Environnement économique et légal

L'environnement économique palestinien a grand besoin d'être développé et amélioré, mais reste considérablement étouffé par l'occupation militaire du Territoire et l'instabilité politique et économique de la région. En conséquence, les planifications économiques et leur mise en pratique sont quasiment stériles. En revanche, le système bancaire palestinien est stable et relativement bien développé, puisqu'il a réussi à survivre plusieurs périodes de crise. Il y a actuellement 22 banques dans le Territoire avec un total de 153 branches situées dans les villes principales. La totalité de leur actif atteignait 5,573.5 millions de dollars à la fin de l'année 2006; la somme des facilités de crédit atteignait 1903.3 millions; les investissements étrangers s'élevaient à 2,424 millions; et la totalité des dépôts s'élevait à 4662.7 millions la même année. Le système bancaire palestinien ne possède aucune infrastructure pour faciliter les transferts

d'argent interbancaires, ou sauvegarder les informations sur les profils crédit. Les banques sont réglementées et contrôlées par l'Autorité Monétaire Palestinienne, qui remplit les fonctions classiques d'une Banque Centrale à l'exception du pouvoir de battre la monnaie.

La bourse palestinienne (PSE - Palestine Securities Exchange) a été établie en 1995 afin de rapatrier les capitaux de la Diaspora palestinienne. A ce jour, 37 compagnies sont cotées en bourse, représentant un vaste réseau d'activités économiques variées. Huit compagnies de courtage, dont les bureaux se trouvent dans les grandes villes palestiniennes, ont été accréditées par la Bourse palestinienne. PSE utilise les techniques les plus performantes pour gérer et exécuter ses transactions financières. L'Autorité des marchés financiers (Palestine Capital Market Authority) à son tour réglemente les opérations boursières. En général, PSE est caractérisée par un manque de liquidité, des transactions boursières peu fréquentes, des investisseurs peu informés, et une volatilité assez haute.

La signature du Protocole de Paris en 1994 a défini les procédures et les règlements qui gouvernent les relations économiques entre la Palestine et Israël, et entre la Palestine et le reste du monde. L'Autorité palestinienne a adopté les principes du libre-échange comme fondement de sa politique économique, dans l'Article 21 de sa Loi fondamentale (Basic Law). Afin de renforcer ses liens économiques et promouvoir ses échanges commerciaux avec la communauté internationale, l'Autorité palestinienne a mené des négociations avec un certain nombre de pays dont les Etats-Unis, le Canada, des pays et institutions de l'Union Européenne, l'Egypte, l'Arabie Saoudite, et la Jordanie. Malheureusement, la population n'a pas pu bénéficier de ces accords commerciaux en raison des restrictions sur le mouvement des biens et des personnes imposées par Israël. Selon la Banque Mondiale, les importations de biens et de services ont représenté environ 70% du PNB palestinien ces six dernières années, alors que les exportations de biens et de services ont représenté entre 15% et 20% du PNB pendant la même période.

Le régime juridique palestinien est composé de multiples systèmes légaux qui ont influencé la structure politique et juridique de la Palestine. Parmi eux, le droit commun anglais, les lois du règne ottoman, et les systèmes juridiques Jordanien et Egyptien. Les tribunaux palestiniens se divisent en plusieurs catégories: les tribunaux réguliers, les tribunaux religieux, les tribunaux spécialisés. Il y a aussi la Cour Suprême de Justice, et la Cour d'appel située à Ramallah, le tribunal régulier le plus important, dont les décisions entraînent un engagement juridique irrévocable auprès des tribunaux subalternes. Dans la Bande de Gaza, la Cour Suprême est la cour la plus importante. Le Conseil Législatif Palestinien (PLC – Palestinian Legislative Council), qui comprend 132 membres élus, est le premier organe élu dans l'histoire de la Palestine; en novembre 2005, il avait déjà passé 85 lois.

L'Autorité palestinienne a rédigé un certain nombre de plans de développement et d'investissement, y compris le Plan de Développement Palestinien (Palestinian Development Plan), une stratégie de développement économique à moyen-terme basée sur l'investissement.
Le problème de la corruption en Palestine est le même que dans d'autres pays en voie de développement. Selon l'indice de perception de la corruption développé par l'organisation Transparency International, la Palestine se classait au 107ème rang sur un total de 159 pays en 2005. Le problème de la corruption est considéré comme le problème le plus sérieux du secteur public. C'est pourquoi l'Autorité palestinienne a adopté un certain nombre de mesures et mis en place des mécanismes visant à combattre ce fléau : adoption de la Loi sur l'enrichissement illicite (Law of Illicit Enrichment) de 2005, création d'une Commission d'audit (Supreme Audit Commission), et permission donnée à certaines organisations de la société civile, telles que la

Coalition pour la transparence et l'intégrité (AMAN - Coalition for Accountability and Integrity) de surveiller les niveaux de corruption.

Cette étude propose un certain nombre de recommandations pour chaque pilier de l'économie du savoir en Palestine, et met l'accent sur plusieurs impératifs, notamment : la promotion du rôle des technologies de l'information et de la communication dans le pays ; l'amélioration de l'environnement des affaires afin d'encourager l'esprit d'entreprise ; la réforme du système éducatif pour promouvoir un apprentissage basé sur l'analyse critique de la connaissance ; la mise en place d'un cadre approprié qui favorise la recherche et le développement ; l'amélioration de la coordination entre différents centres de recherche ; la régulation du marché des télécommunications ; et la valorisation de la concurrence de marché.

Piliers de l'économie du savoir en Jordanie

La Jordanie semble bien plus avancée que la Palestine dans sa transition vers une économie basée sur le savoir, grâce à sa stabilité politique ainsi que ses systèmes juridiques et institutionnels mieux appropriés. Une analyse des développements récents au sein des quatre piliers de l'économie du savoir en Jordanie est disponible ci-dessous.

Le capital humain

Les indices du capital humain en Jordanie sont assez semblables à ceux de la Palestine, à l'exception du fait que l'enseignement supérieur est plus avancé en Jordanie. La majorité des salariés jordaniens (46%) ont arrêté leurs études avant l'école secondaire ; 14% sont allés à l'école secondaire ; 17% ont obtenu un premier diplôme d'études supérieures (bachelor degree) ; et 12% ont obtenu un diplôme intermédiaire. Les filières littéraires et scientifiques traditionnelles attirent beaucoup plus d'étudiants que les formations professionnelles techniques. La Jordanie a le taux d'alphabétisation le plus élevé dans la région; en effet, le taux d'alphabétisation parmi les 15-24 ans excède légèrement 99%. Le budget alloué au financement des établissements publics représentait 4.1% du PNB en 1999, et 4.4% en 2002. Il est à noter que le budget alloué au financement des établissements éducatifs en pourcentage du PNB en Jordanie dépasse celui des pays de l'OCDE.

L'enseignement supérieur en Jordanie a récemment connu une expansion majeure. En 1990, il n'y avait que quatre universités publiques et 34,984 étudiants ; en 2006, le nombre d'universités s'élevait à 24 et la population étudiante à 192,042. De plus, le choix de diplômes académiques s'est considérablement élargi. La majeure partie des inscriptions sont enregistrées dans la filière littéraire, viennent ensuite les sciences physiques et l'ingénierie, et en troisième place les mathématiques et l'informatique. De nombreux programmes spécialisés de troisième cycle se sont aussi développés ces dernières années dans les universités jordaniennes.

Innovation

Le domaine de la recherche et du développement est assez semblable à celui que l'on trouve en Palestine. La Jordanie consacre seulement 0.4% de son PNB à la R&D, et les universités contribuent environ un tiers du total des dépenses pour la recherche scientifique. Les contributions du secteur privé atteignent juste 4% du total alloué à la R&D. Ce manque d'investissement a plusieurs répercussions défavorables, dont l'insuffisance des innovations technologiques ainsi que de leur utilisation et commercialisation, et la distribution inefficace des ressources R&D. Les activités de recherche menées par les instituts académiques ont pour objectif principal de promouvoir les travaux des universités en question, et par conséquent, l'accent est mis sur la quantité plutôt que la qualité.

Infrastructure des TIC

Le marché des télécommunications en Jordanie est l'un des marchés les plus ouverts et les plus compétitifs de la région. Il y a actuellement quatre compagnies de téléphonie mobile dans le pays – Fastlink, Mobilecom, Xpress Telecom and Umniah - et deux compagnies de lignes fixes – Jordan Telecom et Batelco of Jordan. Le nombre d'abonnés aux lignes fixes atteignait 670,000 à la fin de l'année 2005, avec un taux de pénétration de 12.2%. Au même moment, il y avait 3.13 millions d'utilisateurs de téléphones portables, avec un taux de pénétration de 57%. Les connexions Internet sont actuellement offertes par plusieurs fournisseurs d'accès Internet concurrents, notamment en ce qui concerne les services Internet à haut débit. Les prix des services ADSL actuels sont aussi plus élevés que ceux que l'on trouve en Europe et en Israël.

Le pourcentage d'utilisateurs d'ordinateurs est passé de 29.5% en 2003 à 35% en 2004, et le pourcentage d'utilisateurs Internet est lui passé de 15.6% en 2002 à 17.5% en 2004. Les recettes TIC brutes atteignaient 440 millions de dollars en 2004, alors qu'elles ne représentaient que 170 millions de dollars en 2001 ; le nombre d'étudiants en informatique s'élevait à 8,000 en université et 5,300 à l'école secondaire. C'est aussi en Jordanie que l'on trouve la plus grande proportion de diplômes universitaires dans le domaine technologique pour la région entière. En effet, le pays arrive en 14ème position selon un classement réalisé par le Rapport international de la concurrence (Global Competitiveness Report), sur le nombre d'ingénieurs et de scientifiques dans 110 pays du monde.

Environnement économique et légal

L'environnement économique et juridique de la Jordanie est plus favorable que celui de la Palestine. Le système bancaire jordanien est un des plus sophistiqués de la région. A ce jour, on compte 13 banques commerciales, deux banques islamiques et huit banques étrangères dans le pays. Le système entier est contrôlé par la Banque Centrale de Jordanie, et a bénéficié d'améliorations récentes majeures dans tous les domaines, y compris dans celui de la banque électronique (services bancaires offerts sur Internet). En effet, la majorité des banques commerciales offrent maintenant des services électroniques aux particuliers aussi bien qu'aux entreprises.

La Bourse d'Amman (ASE - Amman Stock Exchange) a été établie en 1999 en tant qu'institution privée à but non lucratif, disposant d'une autonomie administrative et financière totale. La Bourse bénéficie d'une infrastructure financière sophistiquée et d'un pouvoir de réglementation, en dépit d'une activité de marché modérée. Le nombre de compagnies cotées en bourse a augmente de 161 en 2001 à 227 en 2006, et la capitalisation boursière a augmente de 4, 476.7 millions de dollars à 21,078,2 millions de dollars durant la même période.

La première Constitution de Jordanie a été adoptée en 1948, et un système juridique national fut ensuite développé afin de remplacer le système ottoman devenu vétuste. Le nouveau système jordanien conserve une influence ottomane en ce qu'il maintient la jurisprudence commune des tribunaux religieux sur les questions concernant le statut individuel, et pour différentes communautés. Le système des tribunaux laïques est inspiré du modèle français.

La Jordanie a aussi adopté une série de lois dont le but est de favoriser et d'encourager le développement économique du pays. Ainsi une série de lois relatives aux TIC ont récemment été adoptées ayant pour objet de déréglementer le marché des télécommunications et d'établir un secteur informatique conséquent. Parmi ces lois: la Loi nationale sur le droit de propriété intellectuelle, la Loi sur le statut privé, et celle sur la liberté d'expression.

En conclusion, l'étude propose une série de recommandations spécifiques concernant la Jordanie, dont voici les plus importantes: le développement de liens entre le capital humain, l'infrastructure

de l'information, les établissements éducatifs et les centres de recherche; la création d'un système éducatif basé sur la demande et qui répond aux attentes des individus ; la promotion au sein de la société de l'esprit d'innovation et d'entreprise ; et la mobilisation des ressources financières nécessaires au développement des secteurs de la haute technologie, des TIC, ainsi que d'autres champs relatifs à l'économie du savoir.

Executive Summary

This study set out to investigate the readiness of the Palestinian and Jordanian economies to transform into knowledge economies. The World Bank 'pillars' of the knowledge economy (an educated labor force, ICT infrastructure and infostructure, research and development and the institutional regime) were used to form the framework for the assessment. An extensive review of literature was carried out, including a review of local and international literature. In addition, semi-structured interviews were carried out with key government officials and private sector companies. The readiness of the economies of Palestine and Jordan regarding each one of the four KBE pillars is summarized below.

KBE Pillars in Palestine

Human Capital Developments

Human capital development in Palestine is improving as demonstrated by such indicators as high school enrolment, reduced illiteracy rate, improved school curricula, and slow but steady introduction of ICT in schools. The Palestinian labor force is estimated at 2,142,000 according to PCBS (Q4, 2006). Roughly, 72% are employed and 28% are unemployed (ILO definition). The distribution of the labor force participation by years of schooling shows that those with higher levels of schooling have a clear advantage in the labor force.

The total number of students enrolled in primary schools reached 953,621 in the school year 2005/2006. Of this total, 70% attend public schools, 6% attend private schools and 24% are in UNRWA schools. Another 124,867 students are enrolled in secondary schools, with 96% attending public schools and the remainder enrolled in private schools. Overall, almost all children up to the age of 12 are attending school and access to basic secondary education is highly equitable with regard to gender. Transition rates to secondary education have been in excess of 90% over the last 5 years. In addition, about 80% of Tawjihi (Baccalaureate) graduates who pass the General Examination continue their education to some kind of post-secondary education. However, the expansion in secondary education in the past few years has been unequally distributed among science, arts and vocational streams. In fact, enrolment in science and vocational streams has continued to drop while that of the arts stream has increased by 2% since the academic year 1999/2000. Overall, about 75% of students who pass the General Examination are from the arts stream.

Regarding tertiary education, 55% of enrolment is found at traditional universities and 33% at Al-Quds Open University. The relative share of education, social and commercial sciences has been growing, while that of engineering and sciences has declined over recent years. Total enrolment in vocational schools has increased from 3000 in 1999/2000 to 5561 in 2004/2005. This low enrolment in vocational education is attributed to the unattractiveness of vocational education in Palestinian society. In 2000, the Palestinian school curricula were introduced with the following innovations: The first Arabic country to teach English starting from the 1st grade; Technology introduced from the 5^{th} grade all the way through the 12^{th} grade as a compulsory subject; Home Economics, Environment and Health introduced in grades 7-10 as an elective subject; a third foreign language introduced as an elective subject; and Economics and Management are introduced in 11^{th} grade and 12^{th} grade in science and arts streams.

Despite the commendable efforts exerted by MOEHE (Ministry of Education and Higher Education) to improve the quality of education and the extent of its coverage, the fact remains

that the Palestinian education system is largely based on rote-learning; one which emphasizes facts, descriptive knowledge and abstract theory at the expense of cognitive learning and critical thinking.

Although Palestine is still at the initial stages of implementing ICT in schools, about 50% of primary and secondary schools have computer laboratories and 70% have access to the Internet. Recently Paltel (the Palestinian Telecommunications Company) has signed an agreement with MOEHE to connect 150 schools to the internet every year until 2015. In addition, 54% of schools have school libraries and 50% have science labs. Although illiteracy rates in the Palestinian Territory have been declining over the years, the female illiteracy rate remains high. Illiteracy rates amongst individuals aged 15 years and older declined from 15.7% in 1995 to 6.5% in 2005. Expenditure on education has been increasing in the Palestinian Territory for the past five years with private expenditure accounting for about one half of the total. Total education expenditure as a percentage of GDP increased from 7.5% in 2000 to 11.5% in 2003.

Job training in the Palestinian context is rather limited in terms of the number of programs and scope of coverage. Moreover, most of the training received by university graduates is theoretical in nature and lacks practicality. Only a small number of companies do provide training for their employees, as the majority of companies see training as an unnecessary and expensive practice.

Research and Development

Research and development in Palestine is inadequate and is lacking in various aspects. Research output in the Palestinian Territory is limited in volume, relatively poor in quality and lacks a clear direction. This notwithstanding, some attempts have been made to draw attention to research in the Palestinian Territory. A national policy for Science and Technology has been drafted, though no action has yet been taken to develop it further.

Research activities in the Palestinian Territories are characterized by the extremely limited role played by universities and the leading role played by NGOs. In fact, the bulk of research that is produced in the Territory is concentrated in the areas of social sciences and development projects; only 5% of total research produced in Palestine until 2002 was scientific in nature. NGOs produced the bulk of research although this type of research generally involves issues related to democracy, human rights, gender and development. Another portion of research is produced through government and its ministries and agencies; this is often characterized by mediocre quality and normally involves the investigation of particular sectors or issues of direct interest to a given ministry. Local universities also produce their research although it is limited due to universities' tight research budgets. Some estimates claim that there are only 0.75 publications per university researcher per year.

Research in Palestine faces numerous obstacles including, a "brain drain" as many researchers opt to work abroad, a lack of qualified researchers in particular fields, job instability for researchers, a lack of cooperation and coordination amongst different research centers, a lack of funds and insufficient intellectual property rights laws.

ICT Infrastructure and Infostructure

IT infrastructure in the Palestinian territory has improved substantially especially after the arrival of the PNA. In 1997, Paltel was established to provide landline services. In 1999, Jawwal was established to provide mobile telephony. As a result of the establishment of Paltel the number of fixed lines increased in the West Bank and Gaza strip from 80,000 in 1996 to 341,330 in 2006 with a penetration rate of 9%. Today, 545 localities within the Palestinian Territory are covered by fixed telephony, meaning 98% of Palestinians living in serviced areas in 2006. In addition, the

number of Jawwal subscribers exceeded 820,000 during the same year. In April, 2005, Wataniya International won the bid to be the second mobile provider in Palestine.

According to PCBS statistics, 32.8% of Palestinian households own computers and 15.9% have access to the internet. Additionally, 51% of individuals aged 10 years and older use computers and 18.4% use the internet. An increasing percentage (15.3%) of home internet users prefer to connect to the internet via ADSL and 68.5% connect via dialup connections. In June 2007, the number of ADSL subscribers exceeded 40,000 with a penetration rate of 12.6%. Moreover, there are over 300 internet cafes in the Palestinian Territory. Palestinians introduced a new innovation in the internet cafe business: some internet cafes have been designated as for women only.

Telecommunications services in the Palestinian territory are relatively expensive in comparison to neighbouring countries. Israel provides services to its citizens for one third the cost of similar services in the Palestinian Territory. Overall, the total number of IT companies in the Palestinian Territory is estimated at 150. The sector employed between 4000 and 5000 IT professionals in 2005. Although there are a number of cultural centers in Palestine, their number remain relatively small compared with the population size. There are 174 cultural centers, 5 museums, 14 theaters, 31 public libraries, 23 local radio stations and 24 TV stations. This gives Palestine one of the highest concentrations of radio and TV stations in the world.

Economic and Institutional Regime

The overall institutional and economic regime in Palestine is still in great need of development and improvement. This is primarily related to the occupation and the lack of political and economic stability in the region. This means development planning and implementation efforts are of little use. The banking system in Palestine is considered a strong and stable system that has managed to stay afloat through turbulent times. There are currently 22 banks operating in the Territory with a total of 153 branches servicing main cities and towns. Total banks' assets by the end of 2006 reached US $5573.5 million, total credit facilities reached US $1903.3 million, foreign investment by banks amounted to US $2424 million and total deposits reached US $4662.7 million. The banking system has no shared infrastructure for the payment amongst banks and no private credit information exists in Palestine. Banks in Palestine are regulated and monitored by the Palestinian Monetary Authority, which serves as the central bank but without the power to issue a national currency.

The Palestine Securities Exchange (PSE) was established in 1995 to repatriate long-term capital from the Palestinian Diaspora. Today, 37 companies are listed in the exchange, covering a wide array of economic activities ranging from banking, insurance, services, etc. Eight licensed brokerage firms with offices in main Palestinian cities have been approved by the exchange to deal with stocks. PSE uses the latest technology in managing and operating all trading, clearing and settlement operations. The Palestine Capital Market Authority supervises and regulates the stock exchange. All in all, PSE is characterized by low liquidity, infrequent trading, less informed investors and relatively high volatility.

The signing of the Paris Protocol in 1994 set the procedures and regulations governing economic relations between Palestine and Israel, and between Palestine and the rest of the world. The PA has adopted the principles of free trade as the cornerstone of its economic policy as stated in Article 21 of the Basic Law. In its efforts to strengthen its economic ties with the international community and to promote economic and trade development, the PA has conducted trade negotiations with a number of countries including USA, Canada, EU, EFTA, Egypt, Saudi Arabia and Jordan. Unfortunately Palestinians did not benefit from the trade agreement because of the Israeli restrictions on the movement of goods and people. According to the World Bank, over the

past six years imports of goods and services represented approximately 70% of GDP, while exports of goods and services represented between 15% and 20% of GDP.

The Palestinian legal system is influenced by multiple legal systems which have affected the entire political and legal structure in Palestine. Most notable of these are the English Common Law, Ottoman ruling, and Jordanian and Egyptian laws. The court system in Palestine is divided into regular, religious and special courts, in addition to the Supreme Court of Justice. The Court of Appeals in Ramallah is deemed to be the highest regular court and its decisions are binding to lower courts. In the Gaza Strip, the Supreme Court is the highest regular court. The Palestinian Legislative Council (PLC), which is comprised of 132 elected members, is the first elected body in the history of the Palestinian people. As of Nov. 2005, 85 laws have been passed and signed into law.

The PA has a number of development plans and investment promotion schemes including the Palestinian Development Plan, which covers medium-term economic development strategy; an investment promotion strategy, which is comprised of three main elements: investment incentives, industrial estates and free zones and investment guarantees.

The perception of corruption in the Palestinian Territory is similar to that in other developing countries. According to Transparency International Perception Index -2005, Palestine ranks 107 out of 159 countries. Corruption is perceived to be gravest in the public sector. Nonetheless, the PA has set in place a number of measures and mechanisms to fight corruption including enacting the Law of Illicit Enrichment No. 7 of 2005, the establishment of the Supreme Audit Commission in addition to allowing Civil Society organizations such as the Coalition for Accountability and Integrity (AMAN) to report on corruption.

The study provides a number of recommendations that are tailored to each and every KBE pillar in Palestine. This includes developing a strong leadership that understands the role of ICT in the development of the country, improving the overall environment for the flourishing of entrepreneurship , improving the education system by moving away from rote-learning and moving into cognitive learning, putting in place the right framework to foster and promote research and development, eliminating duplication of research and increase cooperation amongst different research centers, regulating the telecommunications market and enhancing competition in the market.

KBE Pillars in Jordan

Jordan seems to be relatively better positioned to transform into a knowledge based economy compared to Palestine. The political stability in Jordan together with the right legal and institutional framework has given it a head start in the race towards KBE. The following is a summary of the main developments of the four KBE pillars in Jordan.

Human Capital Developments

Human capital indicators in Jordan are somewhat similar to those in Palestine although tertiary education in Jordan is more advanced. The majority (46%) of employed Jordanians have lower than secondary school education; while 17% of employed Jordanians have Bachelor degrees, 14% have secondary school education and 12% have an intermediate diploma. Jordan has the most literate population in the region; the literacy rate among those aged 15-24 was 99.1%. Expenditure on education amounted to 4.1% in public schools in 1999, this ratio increased to 4.4% in 2002. In fact, Jordan's spending on educational institutions as a percentage of GDP is higher than that of OECD countries. As regards to secondary and tertiary education, the data

show that 50% of Jordanians have not been educated to secondary school level. The data also show that enrolment in Arts and Science education is the dominant form of education in Jordan, followed by vocational training.

Tertiary education in Jordan in the last few years has witnessed a huge expansion: in 1990 there were only 4 public universities with 34,984 students and in 2006 the number of universities increased to 24 with a student population of 192,042. In addition, there has been an increase in the number of academic degrees offered in Jordanian Universities. The bulk of enrolment is in Humanities, followed by Science and Engineering and in third place come Mathematics and Computer Science. Graduate studies have also witnessed huge growth in the last decade as many Jordanian universities introduced new post-graduate programs in different areas of specialization.

Research and Development

Research and development is not in a much better situation than in Palestine. Jordan spends 0.4% of GDP on R&D and universities in Jordan contribute about one third of total expenditure on scientific research. The contribution of the private sector does not exceed 4% of the total allocated funds for R&D. These inefficiencies have resulted in a weak delivery system, which extends from technology generation to adaptation, use and commercialization and inefficient allocation of R&D resources. University research activities are primarily for promotional purposes focusing on quantity rather than quality, and there are limited funds available for academic research at the main universities in Jordan.

ICT Infrastructure and Infostructure

The telecoms market in Jordan is considered as one of the most liberal and competitive markets in the region. There are currently four mobile operators in Jordan; Fastlink, Mobilecom, Xpress Telecom and Umniah. In addition, there are two fixed line operators (Jordan Telecom and Batelco of Jordan). The number of fixed line subscribers was at 670,000 at the end of 2005 with a penetration rate of 12.2%. During the same period, there were 3.13 million mobile subscribers with a penetration rate of 57%. High speed internet services are currently provided by many ISPs with broadband internet at the center of the competition amongst ISPs. Current prices of ADSL services are still higher than those in Europe and Israel.

The percentage of individuals who use computers rose form 29.5% in 2003 to 35% in 2004. Internet users increased from 15.6% in 2002 to 17.5% in 2004. IT gross revenues reached US $440 million in 2004, up from US $170 million in 2001. IT students numbered 8000 at the university level and 5300 at the college level. Jordan also has a higher proportion of university graduates in technological fields than any other country in the region. Indeed, Jordan ranked 14th out of 110 countries for the number of engineers and scientists according to Global Competitiveness Report.

Economic and Institutional Regime

Jordan has a more developed economic and institutional regime compared to Palestine. The banking system in Jordan is one of the strongest banking systems in the region. Today, there are 13 commercial banks, 2 Islamic and 8 foreign banks operating in Jordan. The banking system is regulated and supervised by the Central Bank of Jordan, which is entirely government owned but operates as an independent and autonomous legal entity. The banking system in Jordan has witnessed significant improvement in all areas including e-banking. The majority of commercial banks offer e-banking services for individuals and commercial firms.

Amman Stock Exchange (ASE) was established in 1999 as a non-profit, private institution with administrative and financial autonomy. ASE is well-developed in terms of its financial

infrastructure and regulatory oversight despite low market activity. The number of listed companies on the exchange increased from 161 in 2001 to 227 in 2006 and market capitalization increased from US $4,476.7 million to US $21,078.2 million during the same period. In addition to trading in stocks, ASE also trades in Treasury bills issued by the government, government bonds and corporate bonds.

The first constitution in Jordan was approved in 1948, and this was followed by a process of developing a national legal system to replace the old Ottoman system. The Jordanian legal system echoes its Ottoman heritage in the communal jurisdiction of the religious courts of different communities over matters of personal status. The civil court system follows the French model. Jordan has also enacted a number of laws and regulations aimed at fostering and encouraging economic development in the country. It has also enacted ICT related laws especially to deregulate the telecom market and establish a sound IT sector. Amongst such laws are: the National Intellectual Property Rights Law, privacy status and the status of the freedom of expression.

The study concludes by offering a number of recommendations particular to Jordan. These include: developing linkages between the human resource base, information infrastructure, and higher education and research institutes; creating a demand driven education system that focuses on individual needs; establishing institutions to encourage innovation and entrepreneurship; and mobilizing additional financial support to high-tech and future-oriented sectors such as IT and other knowledge-based fields.

1. Introduction

Increasingly advanced economies derive a significant share of their economic growth from high rates of investments in knowledge and technology. The United States of America continued to experience economic growth in the last two decades primarily as a result of increased investment in education, ICT, research and development as well as the flourishing of entrepreneurship. Other OECD (Organization of Economic Co-operation and Development) countries followed the pattern of investment in knowledge and technology related sectors. In OECD countries, education accounts for 12% of government expenditure and investment in job-related training was estimated as high as 2.5% of Gross Domestic Product (GDP) in Germany and Australia (OECD, 2000). It is estimated that more than 50% of GDP in major OECD economies is now knowledge-generated. Emerging countries such as South Korea, China, India, and Ireland also achieved impressive economic growth through technology investment. For instance, India's software exports accounted for 14% of total exports with revenues of US$6.2 billion in 2000-2001 to register a growth rate of 55% above that of the pervious year.

Despite the unfavorable political environment in the Middle East, particularly in Iraq and Palestine, the Jordanian economy continued to grow in 2005, mainly as a result of the construction boom. However, the rise in world oil prices pushed the inflation rate to 3.5% during the same year. In Palestine the scenario was grimmer as GDP in 2006 declined by 6.9%, while inflation and unemployment rose. In light of these circumstances, both countries are in great need of a development model for sustained economic growth that will overcome the issue of limited resources, which clearly puts the countries in question at a disadvantage; while at the same time captures the strategic advantage that lies in the two countries endowment of human capital and a relatively young population-base. Unlocking the potential of the knowledge economy may provide the answer for Palestine and Jordan's economic growth concerns. Indeed, both countries have initiated a number of measures, and put in place national polices and strategies that would drive economic growth across all sectors, although Jordan has achieved more progress than Palestine in this regard.

This study will assess the extent to which Palestine and Jordan are ready to develop knowledge economies. It will analyze key knowledge-based economy (KBE) indicators so as to capitalize on, and reinforce areas of strength while at the same time attempting to mitigate areas of weakness and develop policies to improve these areas. To this end, the study will cover developments in human capital and the education system as well as the conditions of research and development, Internet and Computer Technology (ICT) infostructure and infrastructure and the overall economic and legal framework in both countries. The study will conclude with the presenting a number of realistic recommendations that are aimed at improving the ability of Jordan and Palestine to develop knowledge economies.

1.1 Objectives

- ✧ To provide a theoretical framework so as to evaluate the features necessary for an enabling environment for a knowledge-based economy within Jordan and Palestine.
- ✧ To consider the development strategies identified in the two countries' strategic economic plans, in an attempt to assess their capacity to promote human development for a KBE.
- ✧ To describe the governance capacities and the legal environment for a KBE in general and particularly in relation to human resources.

- To propose necessary interventions and policies to address the barriers identified and to maximize opportunities for human capital development in the KBE within Palestine and Jordan.

1.2 Methodology

To achieve the abovementioned objectives the following methodology will be adopted in the study:

- A comprehensive literature review on KBE will be carried out to identify key factors, best practices and major elements for consideration in the knowledge economy.
- Review a collection of primary and secondary data on factors related to the readiness of the Palestinian and Jordanian economies to move into a KBE.
- The research team participated in a number of regional and local workshops and conferences related to knowledge indicators and issues including national statistics, intellectual property rights, software and programming and knowledge-based economies.

1.3 Limitations

The scope of knowledge-based economy as a subject is broad and extensive. In fact, to cover all aspects of KBE fully would entail expanding the scope this study to other areas including, but not limited to, social capital, social networks, beliefs and culture. Of course, such concepts are of critical importance in determining how individuals, and societies as a whole, adopt knowledge and the ways it is implemented. However, due to the limited time it was decided to follow previous OECD and World Bank knowledge-based economy studies and limit the scope of analysis to the tangible aspects of the knowledge economy.

2. Understanding the Knowledge-Based Economy

Economic growth theories have evolved over time seeking to capture the underlying factors that drive economic growth. Since the early years of the last century, economic growth theories were largely influenced by Robert Solow's model, which was based on diminishing returns to labor and capital and there is an additional third factor of technological change. As such, the model treated technological knowledge as an exogenous factor (hence the term exogenous growth model). Despite its shortcomings, the model remained in mainstream neoclassical economic literature until the early 1980's. At this time, Romer (1986) proposed that due to the non-rivalrous nature of knowledge, it exhibits increasing returns to scale and therefore knowledge should be incorporated at the heart of the economic growth model (hence the endogenous growth model). This implies that a country that invests in knowledge and technology is not constrained by the steady state equilibrium implied by exogenous growth models. Conversely, the endogenous growth model means that countries can experience limitless economic growth and thus multiple equilibria can be attained (Cotright, 2001). Increasing returns to knowledge, however, have been widely accepted in the economic literature, although some have argued that increasing returns are pertinent to knowledge industries while decreasing returns is associated with the processing industries (Aurther, 1996).

2.1 Definitions of the Knowledge-Based Economy

Economic literature is yet to reach consensus on a common definition for knowledge-based economy. Nonetheless, below we quote a number of general definitions used in the literature to define such an economy:

'*An economy that is characterized by the application of digitalized knowledge to every aspect of the economy'* (Rollyson, 2006).

'*…that relies primarily on the use of ideas rather than physical abilities, and on the application of technology rather than the transformation of raw materials or the exploration of cheap labor* '(World Bank, 2002).

'*Since knowledge is the driver of productivity and economic growth, the term Knowledge-based economy stems from the fuller recognition of the place of knowledge and technology in modern OECD economies'* (OECD, website).

'*The knowledge society is a larger concept than just an increased commitment to R&D. It covers every aspect of the contemporary economy where knowledge is at the heart of value-added from high tech manufacturing and ICTs through knowledge intensive services to the overtly creative industries such as media and architecture'*. (Kok report, 2004).

'*One key distinguishing features of the knowledge economy is deploying new technologies to allow the more systematic exploitation of knowledge'* (Brinkly, 2006).

'*The idea of the knowledge driven economy is not just a description of high tech industries. It describes a set of new sources of competitive advantage which can apply to all sectors, all companies and regions, from agriculture and retail to software and biochemistry* '(Leadbeater, 1999).

2.1.2 Knowledge, its Types and Characteristics

Webster's English Dictionary defines knowledge as '*acquaintance with facts, truths or principles; general erudition'*. Within the job context knowledge is '*...acquired information necessary to do the job*' (University of Washington website). In general, knowledge is broken down into two main types:

1. **Tacit Knowledge:** is knowledge that people have in their minds and is difficult to access. It consists of paradigms, viewpoints, beliefs, and concrete know-how, such as crafts and skills (learngen.org). Basically, it is knowledge that people carry in their minds and is difficult to access.
2. **Codified knowledge**: is simply knowledge that is written down and stored in the form of blueprints, formulae, text books, software programs, etc. When tacit knowledge is written down it becomes codified.

Knowledge could also be divided into the following four categories:
know-what: refers to knowledge about facts, it is close to the concept of information.
know-why: refers to scientific knowledge of principles and laws of nature.
know-how: refers to the skills or capability to do something.
know-who: involves information about who knows and who knows how to do what.

In general, know-what and know-why is codified knowledge while know-how and know-who is tacit knowledge.
Knowledge embodies a number of characteristics and attributes, two of which (non-rivalry and non-excludability) are critical to economic growth (Romer, 1986):

Non-rivalry: Rivalry means only one person uses the good or make use of it at a given time.
Non-excludability: means that one has the ability to exclude others from using what is his.
Cumulative: means that if one wishes to absorb new knowledge one should at least have an adequate base of knowledge.

2.3 Characteristics of the Knowledge-based Economy

A knowledge-based economy has a number of distinctive characteristics:
- ✧ Education and skilled human capital is the most valuable asset in the economy.
- ✧ High proportion of GDP is derived from knowledge-based and knowledge enabling industries such as high and medium technology industries, financial, other business services and teaching.
- ✧ High investment in research and development activities.
- ✧ High literacy rates and tertiary education enrolment.
- ✧ Good technology related capacity and skills as well as strength in innovation.
- ✧ High ICT penetration and Internet usage.
- ✧ A knowledge economy is an agile, networked, adaptable and reliable economy.
- ✧ Economic and political stability in the country.

Once an economy has successfully transcended into a knowledge-based economy, it can look forward to a number of strategic benefits:

- ✧ Higher value added to offset higher costs.
- ✧ Nearly limitless economic growth and increased total factor productivity.
- ✧ A move towards the most profitable stage of production.

- ✧ New sources of growth.
- ✧ Increased competitive position in a globalized world.
- ✧ Better living standards for all citizens.

2.4 Dimensions (pillars) of the knowledge-based economy as described by the World Bank

A large body of economic research has been undertaken in the last decade to understand the fundamental economic and social factors that underpin the emergence of knowledge economies. The World Bank discovered that countries that successfully manage to move into the knowledge economy have the following 'pillars' in common: an educated and skilled labor force; high investment in innovation; a modern information infrastructure; and appropriate economic incentives and institutional regime[1]. Below we will discuss in detail the four main pillars.

2.4.1 Pillar I: Human Capital- An educated and skilled population that can create and use knowledge

'A well-educated and skilled population is essential to the efficient creation, dissemination and utilization of relevant knowledge, which increases total factor productivity and economic growth' (World Bank, 2006). In general, skills have two categories (Summary Report for the Conference on Skills Development in KBE, 1999):

- ✧ **Technical skills**: including facility language, literacy and familiarity with technological system and processes.
- ✧ **General** or **"soft" skills**: including communications, creativity, analytical thinking, cognitive ability, adaptability and flexibility and judgment.

The educational process across all educational levels: pre-school, primary, secondary and tertiary; and across all types of educational systems: vocational and academic; should be enhanced in such a way to produce a qualified labor force that can engineer the transition towards a knowledge-based economy. A study by Guriev (2007) deals with the crucial role for tertiary education institutions that are positioned to advance skills, research and innovation at a time of increasing demand for skilled workers. According to Guriev, the traditional model where the universities are publicly funded and run, heavily regulated and protected from competition, cannot respond to the new challenges. The centralized system of developing contents and formats of educational programs fails to follow available market signals. The traditional model cannot cope with the growing global market mobility of both students and faculty. To provide incentives for academic entrepreneurs, Guriev suggests taking the following measures:

- ✧ Academic institutions should be deregulated to unlock academic innovations and to foster global competition.
- ✧ Since the client of the education system is students, public support of education should be restructured to follow students' choices via portable grants and student loan subsidies.
- ✧ There is a need for the public-private partnership to overcome the fundamental uncertainty/ asymmetric information problems.

In the context of vocational training, the knowledge economy will involve occupational restructuring as well as skill and knowledge changes within existing occupations. In addition, the

[1] Other economists added another pillar and called it the "Missing Pillar". This pillar takes into account the role of government in creating visions and national dialogue, social cohesion in the society, the role of culture, trust and values.

concept of "skill" is expanding to reflect employers' needs for a range of "soft" skills. In order to facilitate the transition towards knowledge based economy, vocational education needs to respond in the following fashion (CRRI-CRLRA, 2000):

- Vocational education and training systems need to re-examine the role and delivery strategies in light of increased demand for new knowledge, generic skills and workers who are equipped for life-long learning.
- To create new knowledge workers, vocational education must adapt and change according to emerging needs.
- Vocational education and training need to respond to changes in industry requirements and to develop the workforce skills required by the new and emerging industries of the information economy.

In general, in facing the challenges of increasing market demand for qualified labor force, a country has at its disposition three strategies to improve the quality of human capital:

- In the **short-run**: a country can recruit foreign talent to fill the gap.
- In the **medium-term**: a country can foster training and re-training of workers and managers to meet the demand.
- In the **long-run**: a country can upgrade the quality of education across all educational levels to prepare the workforce for the knowledge economy.

In the context of a knowledge-economy, particular attention should be given to science education. A report carried out by the International Counsel for Science (ICS, 2006) highlighted three main challenges facing the efforts to foster science throughout the world:

- The widening gap between advanced scientific knowledge and technology and society's ability to capture and use them.
- The declining interest in the study of science and engineering around the world.
- The need to turn knowledge consumers into knowledge creators.

To meet these challenges, the report recommends taking the following set of actions:

- Better communication of science to the public, and enabling constructive dialogue about the risks and benefits of scientific discoveries and new technology.
- Developing effective policies as part of a national strategy for science and technology. These remain pivotal to closing the knowledge gap among countries.
- Improving the quality of science education, teacher training and science curricula as well as expanding the number of educators and strengthening the link between formal and informal education.
- Scientific research should include capacity-building elements whenever possible and countries should make science and technology building a priority through clear strategies to link science and technology with goals for economic growth.
- Paying special attention to problems resulting from the mobility of human capital between least developed and more developed countries.

The majority of the education systems across the world, particularly those in developing countries, need extensive reform to facilitate the transition into a knowledge economy. Below are examples of areas of reform from Malaysia's KBE Master Plan, 2002:

- Focusing on ICT by means of incorporating technology into the student curricula and adopting the use of computers and internet in the classroom.

- ✧ Giving special attention to science and technical education in addition to encouraging students to enroll in science and engineering courses.
- ✧ The school curricula also need to be upgraded in accordance to market demand.
- ✧ Teachers' salaries must be sufficient for provision of a comfortable standard of living, because satisfied teachers will produce higher educational output.
- ✧ Student-teacher contact hours must be increased.
- ✧ Tertiary education must also emphasize the importance of research and work towards capacity building in research, hiring qualified academic staff and incorporating technology as a pedagogical tool in the classroom. Moreover, colleges and universities must be able to read market signals and translate them accordingly by means of offering market demanded courses and specializations.

2.4.2 Pillar II: Innovation- A system composed of firms, research centers, universities, consultants and other organizations that can tap into the growing stock of global knowledge, adapt to local needs, and transform it into products valued by markets.

Knowledge is transformed into goods and services through a country's national innovation system. '*Knowledge benefits become evident when employed within a system of knowledge production in the education and training system, combined with effective macroeconomic framework, communication infrastructure and other factors such as access to the global knowledge base*' (World Bank, 2004). However, national innovation systems are effective only to the extent that the different elements work in harmony.

To foster an appropriate innovation system, an entirely new structure must be created. The new structure involves (World Bank, 2004):

- ✧ An environment conductive to entrepreneurship, with intellectual property rights protection and an appropriate system of standards and quality in place.
- ✧ A functioning framework for the generation of new ideas by research institutions, universities and private firms as well as the entire industry that uses such innovations.
- ✧ The availability of financing for enterprises to use, adapt and develop new technologies.

The prevailing intellectual property rights regime is an important determinant of the amount and quality of technology transfer from industrialized to developing countries as well as the development of new ideas in the domestic market. There is strong evidence that suggests that foreign companies are willing to sell technology to developing countries where they are confident of maintaining property ownership (World Bank, 2004). In fact, as a country moves from importing technology to finding ways of adapting and modifying it to serve local demand or technology conditions, the absence of a regime to protect such new ideas can discourage local developers from investing in such ideas.

Furman (2004) analyzed the drivers of R&D productivity across OECD countries. The results show that levels of innovation are influenced by:

- ✧ A country's technological sophistication.
- ✧ Efforts devoted to the knowledge sector.
- ✧ The composition of investments in innovation as international patenting reflects the level of investment in higher education.

- ✧ The strength of protection of intellectual property rights and the degree of openness to international trade.

In order to foster a culture of innovation, strong and enforceable property rights laws must be put in place. A report by Biac (2004) elaborates on the needs and benefits of having intellectual property rights in place to protect innovation and encourage creativity:

- ✧ Intellectual property rights (IPRs) stimulate innovation, and spur sustainable and widespread economic growth.
- ✧ IPRs promote the disclosure of inventions and pioneering information, which stimulate innovation across and within industries.
- ✧ IPRs promote risky, uncertain and costly investments.
- ✧ IPRs empower consumer protection in the global economy and
- ✧ IPRs promote effective competition.
- ✧ IPRs create new markets because they are tradable and transferable.

In addition, a number of policy reforms are requisite, particularly in R&D institutions. The following is a list of main reforms which governments should undertake to foster innovation (World Bank, 2004):

- ✧ To create a conductive environment for public R&D institutions and their staff so as to engage in contractual research and commercialization of R&D.
- ✧ To provide R&D institutions with appropriate flexibility and autonomy in managing their activities, introduce incentives for applied research and financial sustainability, consolidating R&D systems to be more efficient and to reduce the burden on the public budget.
- ✧ To reform relevant laws to enhance the framework for R&D and innovations.
- ✧ To provide incentives for SMEs to develop adapt and commercialize new technologies by means of providing R&D tax incentives, upgrading labor skills, and reform public procurement, technology parks and incubators.
- ✧ To reform financing instruments so as to support technology developments by providing appropriate legal and regulatory framework and business environment for potential investors and to create technology financing institutions.

2.4.3 Pillar III: Information infrastructure- A dynamic information infrastructure that can facilitate the effective communication, dissemination and processing of information.

The relationship between ICT and economic growth stems from several characteristics related to improved information production and sharing, which include (Grace et al, 2004):

- ✧ Knowledge sharing increases the supply of information, reduces the cost of production and transmits information which in turn leads to increased information availability and accessibility and reduces uncertainty.
- ✧ The use of ICT also increases productivity through the creation of new models for turning inputs into products and services.
- ✧ ICT overcomes geographic boundaries, creating a more efficient marketplace.
- ✧ Networking and information-sharing lead to increased demand for greater openness and transparency.

Key infrastructure elements required to speed up the transition toward a knowledge economy include (Mustafa, 2007):

- ✧ Free competition in the telecommunication market and taking a permissive approach to license multiple communication providers.
- ✧ Ensuring competition in the ISP market by requiring no formal licensing for ISPs.
- ✧ Countries should adopt multiple service providers such as cable modem, DSL, fixed wires, fiber optic cable and multipoint distribution systems.
- ✧ Unbundling of the local loop from incumbent local carriers to unlock the potential of broadband as well as to promote the development of alternative service providers.
- ✧ Regulators should ensure low cost of local access because the price determines access to the internet, its level of use and the development of e-applications.
- ✧ Ensure universal internet access: follow in the footsteps of many countries (Chile, Estonia, Malaysia and Korea) to establish funds to subsidize service provision in rural and remote areas.
- ✧ Governments should also establish regulations related to internet transactions in order to build trust in the internet as a medium for conducting business. This includes establishing clear policies and regulations in issues related to taxation, digital signatures, electronic payments, electronic security, protection of privacy and property rights.

However, *'exclusive emphasis on ICT projects, at the expense of careful analysis and consideration of the broader economic, social and political elements that interact to improve the lives of individuals, is likely to result in unanticipated failures and wasted resources*' (Grace et al, 2003). In addition, advanced economies limit their long-term growth potential if policies allow investment to be channeled into just a few sectors. Diversification not only has the advantage of stabilizing long-term growth, but its effects raise the rates of growth in all sectors (Tassey, 2004). Although a more effective policy that is related to ICT investment is for governments and donors to ensure that ICT access reaches even the more marginalized groups, while at the same time ensuring that ICT projects meets the needs and demands of the target population.

2.4.4 Pillar IV: Creating appropriate economic incentives and an institutional regime that encourage the widespread efficient use of local and global knowledge in all sectors of the economy, that foster entrepreneurship, and that permit and support the economic and social transformations engendered by the knowledge revolution.

In the context of a knowledge-based economy, government has two main functions:

- ✧ To facilitate the development of the economy.
- ✧ To function as an increasingly knowledge- based civil service.

Without appropriate economic and institutional regime, the aforementioned pillars will be rendered fruitless. Therefore, governments should ensure that a country has set in place a stable economic and political regime including:

- ✧ A stable macroeconomic environment that is attractive to investors.
- ✧ Monetary tools utilized to keep inflation at bay.
- ✧ Incentives extended to businesses in order to generate employment and reduce unemployment, with flexible labor markets that facilitate workers' movements across sectors.
- ✧ Adopting an export-oriented exchange rate and having efficient capital markets.
- ✧ Capital mobility across borders should be facilitated and the use of multiple currencies should be allowed to encourage international trade.

- An attractive business environment framework should be put in place including extending tax breaks, reforming the legal system and facilitating company registration processes.
- Pursuit of an open trade policy and the fostering of competition.
- A sound, stable and competitive banking system that offers more products and services and provides long-term financing.

2.5 KBE Success Stories - Challenges, Strategies and Outcomes:

2.5.1 South Korea

In 1998, Korea officially launched a national campaign to make the transition to an advanced knowledge-based economy in which domestic output would thrive, thereby enhancing overall productivity and sustaining economic growth. Korea's successful transformation was attributed to a number of factors (World Bank, 2006), including:

- Intensive learning processes consisting of active technology capability building and complementary human resource development.
- The Korean government was very proactive in supporting the market, providing an environment that would foster and sustain the transformation.
- The strong political leadership of KIM Dae-Jung government.
- The national consensus between the private sector and civil society.

2.5.2 China

In transforming into a knowledge based economy, China had to deal with numerous challenges including:

- Coping with limited natural resources and severe environmental constraints (land, water and raw materials),
- Dealing with the low value-added and high level of pollution generated by its industries
- Improving education, healthcare and social security in line with requirements for economic growth.
- Managing increasing inequality of income amongst regions and between social groups.
- Lastly, mitigating the worsening terms of trade caused by increasing protectionism and trade frictions.
- To meet these challenges, China focused on (Gao, 2005):
- Productivity growth.
- Promotion of technology and innovation.
- Investment in human resources.
- Wide usage of information and communications technology.
- Strengthening social regulation.
- China drew on lessons from other countries and acquired technologies with less uncertainty and with proven technological trajectories.

2.5.3 Ireland and India

A World Bank report (World Bank, 2002) showcased two developing countries that managed successfully the transformation into knowledge-based economies: Ireland and India. Ireland was labeled as one of the poorest countries in the European Union; it was highly dependant on agriculture and low-end manufacturing. According to the report, Ireland's transformation is attributable to:

- Sustained and well targeted investment in education.
- A policy framework favorable to FDI, notably in the ICT sector.
- A stable macroeconomic and fiscal environment.
- Openness to international trade.
- Substantial EU assistance which helped Ireland to target investments relevant to knowledge economy.

As a result, Ireland has become one of the most dynamic knowledge based economies in Europe and became the second largest European exporter of software during the late 1990's.
Meanwhile, India evolved into one of the major software produces in the world. India's success was attributed to (World Bank, 2002; Pandey et al. 2004):

- A business environment and legal framework that promoted scientific business.
- The state and central governments provided state-of-the-art facilities to attract and retain talented specialists.
- The reduction of illiteracy across the country.
- The mobilization of a broad, high quality network of national technological and management institutes as a core training and research base.
- The expansion of ICT infrastructure with a view to offering universal access with innovative and user-friendly technologies.
- The success of the Indian Diaspora in the USA, characterized by advanced technical expertise, familiarity with the West, proficiency in English, good management skills, and connections with companies and entrepreneurs in India.

3. The Presence of KBE Characteristics in Palestine

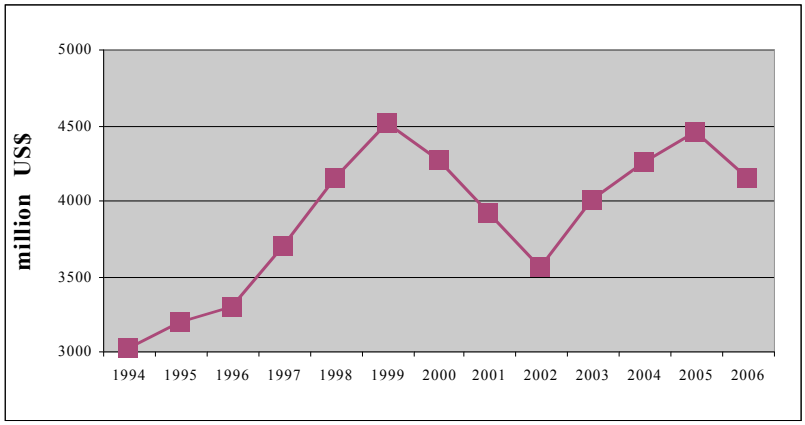
3.1 Overview of the Palestinian Economy

3.1.1 National Accounts[2]

The economic recovery that took place in the Palestinian Territory during the late 1990s, with annual growth rates of around 10%, was reversed by the oppressive Israeli measures which followed the outbreak of the Al-Aqsa Intifada in September 2000. Real Gross Domestic Product (GDP) in the West Bank and Gaza Strip (excluding Jerusalem) dropped by 15%, from US$4,512 million in 1999 to US$3,839 million in 2002. GDP per capita fell by a staggering 26% over the same period; this is a greater decrease than that suffered in the American Great Depression (where per capita GDP fell by around 20% over 2 years) and the Argentine financial crisis of the 1990s (where it dropped by 15-17%).

After the fallout in 2002, GDP rose steadily, with consecutive annual growth rates of 12%, 6% and 5%. However, this trend was reversed in 2006 with a decline in GDP by 6.9% from its level in 2005. GDP per capita, estimated at US$1141.4 in 2006, was 9.7% lower than its level in 2005. This decline was primarily caused by the diplomatic and financial isolation imposed by the international community, the intensification of Israeli movement restrictions, and Israel's withholding of most of the indirect taxes (or 'clearance revenues') collected on behalf of the PA since March 2006.

Figure 1: GDP in the West Bank and Gaza Strip (excluding Jerusalem) 1994-2006 in Million US$ (constant prices, base year = 1997)



3.1.2 Public Finance[3]

Data from the Ministry of Finance showed that the budget deficit reached US$632.54 million at the end of 2006. Revenues reached US$1,095.03 million, of which about US$721.71 million were

[2] This section is based on PCBS data on National Accounts, 1994-2004 including estimates for 2005 and 2006.
[3] From the website of the Palestinian Ministry of Finance: http:// www.mof.gov.ps.

in the form of grants. Expenditure totaled US$1,727.57 million, of which US$1,180.94 million were wages and salaries.

Revenues accrue to the PNA from two sources: domestic tax collection and indirect taxes collected by Israel on behalf of the PNA (a service which it charges for). In 2005, these clearance revenues accounted for two thirds of PNA revenues. However, in 2006 only US$69.22 million was transferred, contributing just 6% of total PNA revenue. Israel withheld the remainder in response to the election of the Hamas Government in 2006. By the end of the year, the Palestinians were due an estimated US$600 million of their own import taxes, VAT and customs duties.

The two tables below show the changes in the budget and its components throughout the year 2006. It is clear from Table 2 how total public revenues decreased dramatically from the last quarter of the year 2005.

Table 2: Main Developments in Public Revenue Items by Quarter, 2005 and 2006 (million US$)[4]

Period	Clearance Revenue	Tax Revenue	Non-Tax Revenue	Total Revenue before Grants &Aid	Grants & Aid	Total
4th Quarter – 05	260.27	46.22	96.27	402.76	47.23	449.99
1st Quarter – 06	69.22	73.66	25.21	167.29	157.76	325.85
2nd Quarter – 06	0.00	47.07	22.57	64.20	102.26	171.9
3rd Quarter – 06	0.00	37.90	17.05	54.90	294.06	363.7
4th Quarter – 06	0.00	46.83	19.12	65.95	167.63	233.58

Table 3: Main Developments in Public Expenditure Items by Quarter, 2005 and 2006 (million US$)[5]

Period	Wages & Salaries	Operational Expenditure	Transfer Payments	Capital Expenditure	Net Lending6	Developmental Expenditure	Total Expenditure
4th Quarter - 05	276.82	53.06	126.72	9.33	49.04	6.03	521
1st Quarter - 06	277.12	22.43	71.23	0.45	60.8	0.75	432.79
2nd Quarter - 06	288.73	28.14	57.12	0.05	32.33	1.58	407.95
3rd Quarter - 06	305.65	24.23	70.52	0.41	50.71	3.22	454.74
4th Quarter - 06	309.44	31.26	77.76	0.26	10.49	2.88	432.09

3.1.3 Foreign Trade[7]

Foreign trade transactions in goods amounted to US$2,742 million in 2005, an increase of 2% compared with 2004. The total value of imported goods increased by 3% to US$2,441 million; 72% of this was imported from Israel. While imports of food and live animals decreased by 13%,

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4 Ministry of Finance, http://www.mof.gov.ps.
5 Ministry of Finance, http://www.mof.gov.ps.
6 Net lending includes: i) payments by the PNA of utility bills (water, electricity) due to Israeli providers from local government, ii) fuel oil expenses for the Gaza Electricity Generating Company, and iii) additional financing to local governments and others.
7 PCBS, preliminary results of the Palestinian Foreign Trade in Goods 2005. Press release 10/1/2007.

there was a 21% increase in imports of machinery and transport equipment. There was an increase of 33% in imports from North & South American countries.

Exports decreased by 4% to US$301 million. This could partly be attributed to increased transportation costs resulting from closures, making Palestinian products less competitive; foreign purchasers switching to more reliable sources of supply due to production and shipping interruptions; and Palestinian producers shifting their focus to domestic markets[8].

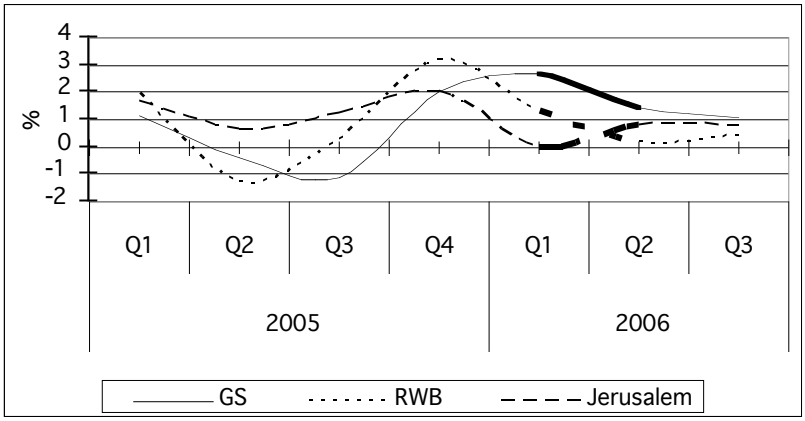
There was an increase of 80% in exports to North & South American countries, while exports to European Union countries decreased by 10%.

3.1.4 Price Levels

It was expected that inflation would remain stable especially in economic conditions characterized by low aggregate demand. However the CPI registered a slight increase (less than 1%), mainly due to Israeli measures, the problems of transporting goods to Gaza, and an increase in world prices pushing up the prices of imports. It is noticeable that the increase mostly affected the prices of basic goods while the prices of non-necessities experienced a decline. Prices of locally produced goods were relatively more affected than prices of imported goods. The degree of price increase was greater in the Gaza Strip, followed by Jerusalem and the West Bank. In the following section we will detail the movement of prices during the 3rd quarter of the year according to categories of goods and geographical region.

Price data for 2006 shows an increase in the CPI, calculated in Shekels, in the Palestinian Territory as it reached 0.72% in the 3rd quarter and 0.73% in the previous quarter. The inflation rate increased in the Gaza Strip, the remaining West Bank and Jerusalem. Prices in the Gaza Strip, however, increased by 1.06% compared to an increase of 0.23% in the previous quarter. Similarly, prices in the West Bank registered an increase of 0.40% compared to an increase of 1.44% in the previous quarter. In Jerusalem, prices increased by 0.79% compared to an increase of 0.77% in the previous sector (see figure 8).

Figure 2: Inflation Rate Calculated in Shekels in Jerusalem, the Remaining West Bank and the Gaza Strip in 2005 and 2006



Source: Calculated by MAS Based on PCBS data on Consumer Price Index, various issues.

[8] World Bank, West Bank and Gaza Update, November 2005.

The food category contributed 79% to the overall price increase during the quarter. This was mainly attributed to increases in the price of fresh fruit and vegetables. This was the highest rate of increase in relation to other groups of goods incorporated in the consumption basket. The transportation and telecommunications group contributed 17% to the overall increase in prices, due to the increase in the price of gasoline and other fuels. Housing, clothing, footwear, educational and entertainment services registered a decline, with some degree of variation in their respective prices.

3.2. A Review of the Main Knowledge- Based Economy Pillars in Palestine

3.2.1 Human Capital Developments

A skilled and adaptable labor force is one of the critical elements that underlies the potential development within any society and facilitate its transition into the knowledge-based economy. Today's working environment demands new and cutting-edge skills both of the soft and technical types. These skills require constant updating in the part of the worker in order to maintain a competitive edge in the workplace. Since the labor force is the outcome of the existing educational system and the on-the-job learning processes, the educational system assumes the responsibility of preparing the labor force in accordance with market needs across all schooling levels from pre-school to tertiary education. To carry out its task effectively, educators must be able to read market signals correctly and translate them into executable educational policies and procedures with the aim to raising the quality of education so as to create a qualified work force that would be able to carry upon its shoulders the challenges of shifting the economy into the knowledge frontiers. In this section, we will describe the characteristics of the Palestinian labor force and key indicators of the education system.

1. The Palestinian Labor Force

The Palestinian labor force could be characterized as a relatively skilled one. The Palestinian unskilled labor, which predominantly used to work in Israel, was immensely affected by Israeli closure of its markets. The size of the Palestinian labor force is estimated at 2,142 thousand according to PCBS latest labor force survey (Q4, 2006). Roughly, 72% are employed and around 28% are unemployed (ILO definition). The distribution of the labor force participation rates by years of schooling shows that those with higher years of schooling have a clear advantage in the labor market. The labor force participation rate for those with no schooling is 16.3%, 1-6 years of schooling is 45.8%, 7-9 years of schooling 44.4%, 10-12 years of schooling 38.2% and over 13 years of schooling 56.3%. Moreover, unemployment rates are lowest among workers with higher levels of education; 17.9% for workers with over 13 years of schooling, 23.7% for workers with 10-12 years of schooling, 22.6% for workers with 9-7 years of schooling, 27% for workers with 1-6 years of schooling and 6.2% for workers with no schooling at all.

2. The Palestinian Education System

The Development of the Palestinian Education System: A Historical Perspective

To have a clearer picture of the progress of the Palestinian education system, one has to understand how the system functioned under occupation. After the Israeli occupation of Palestine in 1948, the West Bank was annexed to Jordan and the Gaza Strip to Egypt. As a consequence, the educational system in the West Bank adopted the Jordanian curricula and the Gaza Strip used the Egyptian's. During the same period elementary schools were established in rural areas, and

every governorate had at least one secondary school: one for boys and one for girls. During the fifties and sixties, thousands of Palestinians graduated with degrees in engineering, medicine, education and other specializations. Many Palestinian professionals acquired training and experiences by attending academic training institutes or on the job-training at multinational companies.

In 1967, Israel occupied the West Bank and the Gaza Strip which proved to be detrimental to the education system. For one, the Palestinian education system was subjected to Israeli military rule which hampered its development. The hiring of new teachers was limited, office supplies were scarce and classrooms were overcrowded, reaching as high as 50 students per teacher. Another Israeli military policy was aimed at weakening and discouraging tertiary education. Universities in the West Bank and Gaza Strip were limited to six; they also lacked the appropriate infrastructure and faced continuous and long periods of closure. Nonetheless, universities and colleges delivered several benefits to the Palestinian society including extending the opportunity to the disadvantaged in the society to obtain a college education. Universities also attracted a number of Palestinian academics to teach in the Palestinian Territory and served as a platform whereby students and professors alike worked together to expose the Palestinian cause at the local, regional and international levels (Abu El Homous, 2006). Upon the inception of the Palestinian National Authority in 1994, the educational system was significantly restructured and improved. This new process was symbolized by the creation of the first Ministry of Education and Ministry of Higher Education in Palestine. These ministries inherited a weak and underdeveloped education system and quickly began a process of rescuing the entire educational system. In a relatively short time, the number of schools increased, plans were put in place for the training of teachers and school administrators and school levels were upgraded to secondary education in many rural areas.

3. Schooling in the Palestinian Territory

The Palestinian educational system is comprised of a mandatory basic cycle covering Grades 1 to 10. Optional secondary education covers grades 11 and 12, with the option of general secondary education and a few vocational secondary schools. Post secondary education is offered in 11 universities, 11 technical colleges and 19 community colleges that offer mainly two-year diploma courses in technical and commercial specializations.

According to statistics released by MOEHE, the total number of students enrolled in primary schools in the Palestinian Territory reached 953,621 during the school year 2005/2006. Of which, 70% attend public schools, 6% in private schools and 24% in UNRWA schools. In secondary schools, 124,867 students were enrolled, with 96% attending public schools and the rest in private schools. The number of children attending basic and secondary schools grew by 25% between 1999/2000 and 2005/2006. The largest percentage increase in enrolment was at government schools partly due to the rapid growth of enrolment in 10-12 grades and the large number of government schools that were constructed during the period. Overall, almost all children up to the age of 12 are attending school and access to basic secondary education is highly equitable especially with regard to gender. The number of teachers increased by 108% during the same period, and the student to teacher ratio registered 26:1 in public schools.

Transition rates to secondary education have been in excess of 90% over the last five years. Roughly, 80% of Tawjihi graduates who pass the general examination go on to some kind of post-secondary education or training. The expansion of secondary education in the past few years has been unequal between scientific, arts and vocational streams. In fact, enrolment in the scientific and vocational streams has continued to drop while those in the arts streams have

increased by 2% since the academic year 1999/2000. In general, about 75% of students who pass the Tawjihi examination are from the arts stream. The decline in student enrollment in the scientific stream in favor of the arts stream has the implication of reducing the size of potential pool of candidates entering science and technology (S&T) programs in higher education.

Regarding tertiary education, the bulk of enrollment (55%) is found at traditional universities and 33% at Al-Quds Open University. The share of education and social and commercial science enrollment has grown from 13.6% and 16.6%, respectively, in 1990/1991 to 31.2% and 31.2%, in 2004/2005, while engineering and science enrollments at traditional universities have decreased from 8.6% and 14.6%, respectively in 1990/1991 to 6.8% and 11.2%, in 2004/2005 (Abu El hummus, 2006). The decline in science and engineering enrollment is a serious problem that merits the utmost attention of educators and policymakers alike.

Regarding vocational training and education, there are 15 secondary industrial schools offering 17 specializations with total enrollment of 2185 students in 2004/2005. Commercial subjects are taught at 64 academic schools with nearly 3000 students. Total enrollment in vocational schools increased from 3000 in 1999/2000 to 5561 in 2004/2005 (World Bank, 2006). Such low enrollment in vocational schools is attributed the unattractiveness of vocational training in the Palestinian context. Indeed, vocational training is regarded in the Palestinian society as inferior to academic education. In addition, vocational education programs are largely out of touch with the labor market and many have weak links with the private sector.

4. School Curricula

Until 1998, there was no national curriculum in the Palestinian Territory. In 2000, a new national curriculum was implemented in the 1st and 6th grades; it was later expanded all the way through the 12th grade in 2006. The new Palestinian curricula contain a number of innovations including (World Bank, 2006):

- The first Arabic country to teach English starting from the 1st grade.
- Technology is introduced from the 5th grade all the way through the 12th grade as a compulsory subject.
- Home Economics, Environment and Health are introduced in grades 7-10 as an elective subject.
- A third foreign language is introduced as an elective subject.
- Economics and Management are introduced in 11th grade and 12th grade in scientific and literary streams.

The same report also outlined the following achievement in the education system:

- Enrollment in basic education is universal and gross enrollment ratio for secondary education is above 80% (highest in MENA countries).
- Access to basic and secondary education is highly equitable with respect to gender, location, refugee status and household income levels (highest in MENA countries).
- High enrollment rate in tertiary education, above 40% for the age group 18-24.
- Availability of textbooks for children in all schools.
- Palestinian children participated in international tests (Trends in International Mathematics and Science Study-TIMSS) and scored above the average for MENA countries.

Overall, despite the commendable efforts exerted by MOEHE to improve the quality and extent of coverage of education, the fact remains that the Palestinian education system is for the large part based on rote-learning, one which emphases facts, descriptive knowledge and abstract

theory. Ultimately, more efforts are needed to incorporate the development of cognitive and problem-solving skills into the student curricula in order to meet the demand of a knowledge economy.

5. The Use of ICT in Schools

Palestine is still in the initial stages of implementing ICT in schools. About 50% of primary and secondary schools in the Palestinian Territory now have a computer laboratory, a total of 70 schools have internet access, of which 23 have wireless connection. The Palestinian Education Initiative is the major program responsible for the introduction of ICTs in schools. Recently, the Palestinian Telecommunications Company (Paltel) has signed an agreement with MOEHE to connect 150 schools to the internet every year through the year 2015 (Alquds newspaper, May 24, 2007). This is certainly a step in the right direction and should substantially improve students' access to the internet.

The progress that has been made regarding equipping schools with adequate libraries and science labs is satisfactory but more efforts are still required to provide students with basic educational infrastructure. Roughly, 54% of schools have school libraries and 50% have science labs (World Bank, 2006).

The World Bank report (2006) points to a clear shortage in the number of IT teachers at schools. In 2005, only 400 teachers had a BA in computer science. This number represents about 50% of IT teachers at schools, which means that 50% of teachers who presently teach technology related subjects have no background in IT. Undoubtedly, this will have a negative impact of the quality of IT education in schools.

6. Illiteracy Rates

Illiteracy rates in the Palestinian Territory have been declining over the years; however, female illiteracy rates are still significant. According to PCBS statistics, there are 137 thousand illiterate adults, of which 78% are female. Illiteracy rates among individuals aged 15 years and older in the Palestinian Territory decreased from 15.7% in 1995 to 6.5% in 2006. From a gender perspective, illiteracy rate decreased among males from 8.5% to 2.9%, while it decreased among females from 23% to 10.2% during the same period.

7. Expenditure on Education

Education expenditure has been increasing in the Palestinian Territory for the past five years. Private expenditure accounts for about half of all total expenditure on education. Total education expenditure as a percentage of GDP increased from 7.5% in 2000 to 11.5% in 2003. Government share of total education expenditure dropped from 42% in 2000 to 34% in 2003. Household expenditure on education as a percentage of total annual household expenditure increased from 3.3% in 2000 to 6.1% in 2003.

8. Pre-job and On-the-job Training

Job training in the Palestinian Territory is limited in terms of number of programs and scope of coverage. Most of the training received by university and college graduates is theoretical in nature and lacks practical applicability. This leaves the great majority of graduates without the proper training that is needed in the job market. To obtain the required training, many fresh graduates seek language and computer training at local training centers at their own expense. Unfortunately, many local training centers, again, seem to focus on the theoretical matters for the

most part and are out of touch with labor market needs. What makes the situation worse is the fact that only a small number of companies offer any kind of formal training for new recruits, with the exceptions of banks. The banking sector is one of the best sectors in this regard, as it provides specialized banking training for employees. In the past, most banks dispatched employees to neighboring countries to receive training. Lately, banks have established the Banking Studies Institute in Ramallah to reduce the cost of training and make sure that most employees would receive an equitable chance at training.

In general, most of the training that goes on in the Palestinian Territory is usually carried out by either the public sector, NGOs or large private companies. The public sector dispatches employees to donor countries in order to obtain appropriate training in specialized subjects. However, it must be noted that the majority of employees who are dispatched abroad for training are generally high-ranked employees. Thus the large majority of public employees do not benefit from these opportunities. That said, one has to acknowledge that the Ministry of Education provides equitable training opportunities for all teachers.

3.2.2 Research and Development (Innovation)

1. The Reality of Research and Development in Palestine

Research output in the Palestinian Territory is limited in volume, relatively poor in quality and lacks a clear direction. In fact, *'research and development in the Palestinian context is overlooked, researchers are underpaid, and there is an absence of institutional encouragement or active professional organizations*' (PARCP, 2001). In general, research is yet to be considered a national priority as evidenced by the lack of serious efforts to establish national bodies so as to promote and foster research activities. The lack of data and indicators on the volume of research produced in the Territory actually reflects the marginalization and neglecting of this critical ingredient for economic and social development in the Territory. Nonetheless, there have been some attempts to draw attention to the importance of research and particularly to draft a national policy for science and technology and related scientific research. To this end, the Ministry of Planning and International Cooperation carried out an analytical study (1999) on the situation of research in Palestine. The study concluded that a great deal of duplication exists in research activities, large volumes of research carried out by the surveyed centers cannot be classified as scientific research and there was no indication that the work involves any innovative developments of either products or solutions. In 1999, the Ministry of Higher Education in cooperation with the science department at the Arab League for Educational, Cultural and Scientific Organization (ALESCO) prepared an investigative report for the development of a policy for science and technology. In 2005, the National Policy for Science and Technology (the white paper) was developed, however it is still in the form of a draft paper and no further action has been taken to improve on it.

A key development in the area of research was the establishment of the Palestinian Central Bureau of Statistics (PCBS) in 1993. PCBS represents an important step towards obtaining Palestinian national statistics, which by the way were provided by the Israeli Statistical Bureau, and provided Palestinian researchers and policymakers for the first time with relatively accurate data on demographics, economics, social, health, and environment.

The Palestine Academy for Science and Technology (PALAST) was created in 1994 by a presidential decree with the aim of institutionalizing scientific and technological research in Palestine, promoting scientific advisory and innovative technological advances. PALAST carried out a number of research activities related to water, environment and microbiology. Nevertheless the role of the academy in promoting and foster scientific research in the Territory is still limited.

2. Research by Type of Institution

Research activities are characterized by the extremely limited role played by universities and the leading role played by NGOs. University scholars who do conduct social research tend to do so in their own capacities as members of think tanks or NGOs, consultants to international organizations or Palestinian Authority agencies or on independent basis. In fact, the bulk of research that is produced in the Territory is concentrated in the areas of social science and development subjects; only 5% of the total research produced in Palestine up to 2002 was scientific in nature (PALAST, 2002). Social research in the Palestinian context is typically aimed at investigating and analyzing the various social and development issues that afflict the Palestinian society. It also attempts to measure the underlying factors which wrecked humanitarian and economic conditions in the Territory. The nature of research and its focus are directly tied with donors' priorities and do not necessarily correspond to the Palestinian national priorities. NGO research generally involves issues related to democracy, human rights, gender, and development. International organizations including the UNDP and the World Bank produce research for organizational, programmatic and funding purposes rather than for promoting scholarship and academic exchange.

Another bulk of research activities is produced by the government through its ministries and institutions. However this particular type of research is overly characterized by its mediocre quality and usually involves investigating particular sectors or issues that are of direct interest to a given ministry or government agency. The PA produced research in a wide array of areas including: economics, finance, agriculture, manufacturing, politics, environment, water, etc. Needless to say that the bulk of these activities are sponsored by donor countries and quite often technical expertise is provided by the donors themselves. Hence, there are serious doubts as to whether such research meets national priorities.

Local universities produce their own research, although the volume of research produced is limited, particularly due to universities' tight research budgets. Some estimates claim that there are only 0.75 publications per university researcher per year. Such low volumes are attributed to heavy teaching loads at universities, insufficient funding, lack of coordination and cooperation among local institutions, and lack of financial incentives for researchers. University research covers a wide array of topics ranging from social sciences to pure science and technology. However, applied scientific research at universities is limited mainly due to poor linkages that exist between universities and the private sector, poor or inadequate facilities and in some cases the lack of technical expertise.

3. Obstacles Facing the Research and Development in Palestine

There is no doubt that the Israeli occupation of the Palestinian Territory for about 40 years has left its toll not only on the Palestinian education system as a whole but also on research infrastructure in the country. The Israeli occupation purposefully arrested the development in the education system, leaving the schooling system with outdated curricula and many school graduates unable to continue their tertiary education. Such tough conditions led to the so-called "brain drain" as many Palestinian academics were forced to work overseas particularly in the Gulf countries, Europe and USA. This has adversely impacted the overall infrastructure for research and development in the Territory as many have chosen to stay abroad or were not allowed back into the Territory, thus depriving the Palestinian society of such critical font for research.

Palestinian researchers also suffer from job instability as many research institutions have limited financial resources. According to a study carried out by the Palestine Academy for Social Science

and Technology (2002), 70% of government institutions suffer a noticeable shortage in specialized staff to carry out scientific research. The same study attributed this shortage to the fact that scientific research centers lack guarantees of job stability and continuity of financing. This forces the majority of specialized researches to work in a more stable environment, namely local universities.

The lack of cooperation and coordination amongst the various research and development centers is considered by far one of the major problems that adversely affect the quality of research in Palestine. Another upshot which emanated from the lack of coordination in the sector is the problem of duplication of work as many institutions refuse to publish their findings because it's considered a source of power for the institute. Last but not least, the lack of financial resources that is required to support and establish research facilities, training and staffing have hampered the development of research in the Palestinian Territory.

4. Intellectual Property Rights in Palestine

The fact that Palestine, over its modern history, had been ruled by various colonial powers extending from the Ottoman ruling to the more recent Israeli occupation had an immense impact on the Palestinian legislation system. The first copyright legislation was enacted in 1910 by the Ottoman ruling although it was never implemented. During the British Mandate (1918-1948), the English copyright law of 1924 was applied to Palestine. In the period (1948-1967), the West Bank was annexed to Jordan where the Ottoman copyright law of 1910 was in effect and as a result the same copyright law was applied in the West Bank, while in the Gaza Strip the British law of 1924 remained in effect. Overall, neither law was effectively implemented in the West Bank or in the Gaza Strip. During the Israeli occupation of the West Bank and the Gaza Strip, Israeli retained laws in force in the Palestinian Territory and at the same time constrained their implementation by way of issuing military orders. It is worth mentioning here that after the Israeli occupation of the West Bank which stamped out the Jordanian rule in the Territory, the English copyright law of 1924 was once again applied in the Territory.

With the inception of the PNA, there have been numerous attempts, mainly by the Ministry of culture, to enact a new Palestinian intellectual property law that accommodates for new international property law legislation. To this end, a new law (1996) was drafted and presented to the Palestinian Legislative Counsel and was discussed at specialized committees but unfortunately it was not approved. In 2000, the Ministry attempted, again, to draft a new copyright law, which was presented and discussed in the PLC but was not approved either.

In sum, the British copyright law of 1924 is theoretically still in effect in the Palestinian Territory although it is outdated and not enforced. Palestine is a member in the Berne Convention for intellectual property rights (1933) as well as a member in the Arab Copyright agreement of 1981 and holds an observer status in the WIPO (World Intellectual Property Organization) since 1998.

3.2.3 Infostructure and Infrastructure

1. Infrastructure

The Israeli occupation systematically targeted the Palestinian infrastructure particularly that of the telecommunications sector under the pretext of security. This was translated on the ground by executing a number of bizarre measures aimed at inhibiting the development of the sector. During the conflict between Israel and the Arab World, international telephone lines between Palestine and the Arab World were unavailable for around 23 years, making networking particularly difficult for Palestinians. Restrictions on Palestinians meant that the Israeli telecommunications

company (Bezeq), was never quick to service Palestinian users in the occupied Territory. Many Palestinians waited for 7 years on average for a phone to be installed in their home or office, and it is not uncommon to find people who were waiting for more than 20 years (Parry, 1997). The Israel Military Order (1279) of June 1989 directly stated that it was an offence for Palestinians to use telephone lines for sending 'faxes, electronic mail or any other electronic transmissions" (JMCC, 1993). Moreover, access for Palestinians to leased lines was forbidden for security reasons prior to the Oslo Accord. Ultimately, the Palestinian telecommunications infrastructure was fragmented in such away designed so that all calls are switched through Israeli exchanges.

After the Oslo Accord, a number of Israeli measures were lifted and the telecom sector was resuscitated; the Military Order no. 1279 was lifted and the Palestinian access to leased lines was 'subject to negations'. After the Oslo Accord, the PA was handed over control of the telephone network. Realizing the extent of the damage inflected on the sector, the PA undertook a number of steps in order to rejuvenate the telecommunications and technology sector, these steps incorporated, among other things:

- The merging of the telecommunications and information technology sectors into the Ministry of Telecommunications and Information Technology.
- Signing an agreement with Wataniya International Company to increase competition in the local telecommunication market.
- Palestine has also acquired its own Top Level Domain (TLD), better known as ".ps". Later, the Palestine Internet Naming Authority (PNINA) was established to run the TLD.

a. Telecommunications in Palestine

Paltel and Jawwal: The Incumbent Palestinian Telecommunication Company

The first practical step to developing the telecommunications sector was the establishment of Paltel, the Palestinian Telecommunications Company, which acquired an exclusive license to provide land phone services in 1997. Paltel does not own its own International Direct line gateway; instead a national Israeli operator (Bezeq) and 2 privately owned facility based carriers provide such services. In 1999, Paltel launched a cellular phone service in Palestine "Jawwal". As a result, the number of landlines in the West Bank and Gaza Strip increased from 80,000 in 1996 to 341,330 in 2006 with a penetration rate of 9 per 100 inhabitants. Landline services covered 545 localities in the Palestinian Territory rendering about 98% of Palestinians living in served areas in 2006. In addition, the number of Jawwal subscribers was in excess of 820,000 during the same period (Paltel, 2006). Paltel also has taken the required steps towards activating the international code (970) as one of the symbols of national sovereignty with about 120 countries now using this code.

Wataniya: The New Cellular Service Company

In early 2006, the PA released tenders for the second mobile operator. In September 2006, Wataniya International won the bid for the second GSM in Palestine with a bid of about US$354 million. The agreement was signed in mid December with the Palestinian Investment Fund (PIF) to form a new company. Under the agreement Wataniya will manage the start-up company and hold 40% of its equity, whilst the PIF will own 30% with the remaining to be offered to the Palestinian public through an IPO. Wataniya's cellular services combine 2G and 3G services and operations are expected to start mid 2007 (Wataniya, 2006).

b. Obstacles and Challenges in the Telecommunications Industry

One of the major obstacles facing the Palestinian telecommunication sector is the Israeli domination over Radio frequency spectrum signals in Palestine and its firm refusal to separate the Israeli and Palestinian networks. Other obstacles that hamper the development of the IT and telecommunications sector include (World Summit on the Information Society, 2005):

- Seizure of technical equipment that is designated to upgrade the IT infrastructure.
- Israel's refusal to connect East Jerusalem with the Palestinian telecommunication network.
- Israel still refuses direct Palestinian access to the World Wide Web.
- In 1999, the PA signed an agreement with Egypt and Jordan to connect the Territory with the external world through fiber optic cable/ microwave but Israel was quick to stop the project before coming out to life.
- The illegal penetration of the Palestinian market by Israeli companies which controlled a market share of 56% of the Palestinian telecom market.
- Selling Israeli mobiles in the Palestinian Territory in an unfair manner while having to pay no taxes and without having to apply for any sort of licensing requirements. Whereas, Palestinians are not allowed to market their products in the Israeli market.
- Israel destroyed the Palestinian telecom infrastructure including transmission towers.
- Restrictions on high tech imports and narrow internet bandwidth for Palestinians to use.

c. Internet and Computer Use in Palestine

According to PCBS Household Survey on Information and Communication Technology (2006), 32.8% of Palestinian households own computers and 15.9% have access to the internet. Roughly, 51% of people aged 10 years and older use computers and 18.4% use the internet. The percentage of children aged 10-17 who use computers increased in 2006 to reach 70.7%, while only 23.7% of the same age group knew about and used the internet. The survey also revealed that 77.7% of those who do not have their own computers attribute this to computers' high cost. Computer illiteracy in the Palestinian Territory is gravest amongst women. About 54% of females are computer illiterate compared to 45% of males. Regarding the availability of telephony services, the survey shows that 50.8% of households have fixed telephone services and 81% have mobile phones. With regards to main place of computer use, the majority (52%) of Palestinians use computers at home, 21% at school/ university and 7.1% at internet cafes.

Moreover, an increasing segment of home internet users prefer connectivity through ADSL due to its inherent savings and more stable connectivity; 68.5% of internet users access the internet via dialup and 15.3% via ADSL. It is expected that ADSL will supersede dial-up as a medium of internet connectivity when ADSL reaches more areas, especially rural areas. The survey also uncovered that the Palestinian household spends, on average, 68.5 NIS per month on internet connection fees and around 60% of families consider this as reasonable.

d. Palestinians Use the Internet and Video Conferencing to Overcome Distances and Barriers

Palestinians use the internet as an essential tool to solve the ordinary citizen problems and above all to overcome physical barriers. For instance, universities have built student/lecture portals as a communication tool to overcome long periods of curfews and roadblocks (RITAG at Birzeit University is an example). Paltel and Jawwal both have installed e-service and e-billing to overcome postal disruption, banks have installed internet banking service allowing people to make financial transactions during curfews and siege. Another interesting practical use of the internet was the linking of various Palestinian refugee camps scatted around the region. The refugees use community centers within the camps, which are equipped with PCs and internet lines, to communicate with each other, track relatives and share experience. Palestinians use

video conferencing to overcome geographical distance and run their businesses. For example, the Palestinian Legislative Council uses video conferencing to communicate between PLC members in the West Bank and those in the Gaza Strip. Likewise, NGOs and companies use video conferencing to run their businesses and overcome checkpoints and borders.

e. Internet Subscription is rising

In an effort to boost internet subscription, Paltel implemented the Subscription Free Initiative in 2004 allowing Palestinians to link to the internet for free with the only cost being the phone bill. According to Paltel, this has provided internet access to new segment of the Palestinian population and increased the number of internet unique users from 30,000 to 67,000 (Paltel Group Annual Report, 2006).

In February 2005, Paltel established Hadara Technological Investment Company through the acquisition and merging of the main internet service providers (Planet, Palestine on Line, PIS and Jursal). Hadara services include network setup, installation and connection (LAN/WAN/WLAN) and internet access via ADSL. ADSL are now distributed over 134 locations and plans are underway to connect an additional 30 locations by years' end. The number of ADSL subscriptions exceeded 40,000 in June of 2007 with a penetration rate of 12.6%, the second in the Arab world. The introduction of ADSL services has negatively affected the dialup subscription rates. After reaching a peak of 45,329 subscribers in 2004, the prepaid and post paid dialup subscriber base witnessed a dramatic drop to reach 6,532 in June of 2006 (BI-ME, 2006).

f. ISPs and Internet Cost

The number of Palestinian ISPs is unstable due to the merging of ISPs to benefit from the economies of scale. The recent introduction of ADSL and the launching of the Subscription Free Initiative by Paltel had immensely affected the number of Palestinian ISPs. Palnet was the first ISP in the Territory that created a wireless network using microwave transmitters, bouncing the two signals from the Israeli ISP (Netvision) into Ramallah, thus providing ministries and institutions with internet services. In 2001, there were 13 ISPs in Palestine, this number increased to 20 in 2004. The majority of ISPs are located in the Ramallah and Jerusalem areas[9]. They served as many as 25,000 registered subscribers, but may have many individuals sharing the same account. In recent years, it seems that Hadara have dominated the ISP market and have almost full control over ISP service providing market in the Territory. One final note, one of the characteristics of the internet in the Palestinian Territory is the absence of any kind of censorship.

Telecommunication services in the Palestinian Territory are relatively expensive in comparison to neighboring countries. This is mainly attributed to the fact that Paltel purchases the service from Israel and then re-sells them in the Territory; the average cost of subscription is 25 dollars per month. Israel provides service to its citizens for one third the cost of the similar service provided to Palestinians. The price of 1 Mb in Israel is only 70 Shekels, while the price of the same capacity for Palestinians is 205 Shekels excluding taxes (www.openarab.net). Internet cost is high mainly because of the lack of competition and regulation in the market.

g. The Palestinian IT Sector's Contribution to the Palestinian Economy is Increasing

[9] There are different estimates for the number of ISPs in the Territory.

The total number of IT enterprises in the Palestinian Territory is estimated at 150, of which only 76 are registered with the Palestinian IT Association (PITA). The sector employed between 4000 and 5000 professionals in 2005. According to the latest estimates, the growth rate in the sector ranged between 25-30%. The estimated ICT market size in the Palestinian Territory is around US$200-300 millions with revenues estimated at US$100 and US$15 million dollars of export revenues (Alquds Newspaper, January 1, 2007).

h. Key Information Technology Support Institutions

- **PITA**
  The Palestinian IT Association (PITA) was founded in 1999 in Ramallah as a membership-based organization for locally registered IT companies. Currently, PITA has 76 members covering a wide array of sub-sectors including hardware distributors, software development firms, office automation vendors, ISPs, IT consulting and telecommunications. Pita's support activities are carried out through its two main committees: the policy advocacy committee and marketing and market development committees. Pita's main objective is to represent the collective interest of the private IT sector in Palestine.

- **PICTI**
  The Palestinian Information and Telecommunications Technology Incubator (PICTI) is an independent Palestinian organization that has been created through the initiative and support of the Palestinian information technology community. PICTI endeavors to revitalize and sustain growth of the IT sector in Palestine. Its services include the establishment of an incubator which offers professional business services to Palestinian entrepreneurs who have mature concepts for unique and innovative ICT products and to assess IT firms to have strong market potential. In addition to extending entrepreneurs with work stations, software, office space and equipment, PICTI offers a number of services including marketing, business development, legal, financial and networking services.

2. ICT Infostructure:

Although there are a number of cultural centers scattered across the Palestinian Territory, their number is relatively small compared to the population size. According to PCBS Culture Statistics of 2005, the Palestinian Territory have 174 cultural centers, 5 museums, 14 theatres, 31 public libraries, 23 local ratio stations and 24 local TV stations. In fact, Palestine has one of the highest concentrations of radio and TV stations in the world. Three local newspapers are in circulation in the Territory; Alquds with a circulation of 25,000, Al-Ayyam with a circulation of 5,000, and Al-Hayat Aljadida (the official daily paper) with a circulation of 15,000. The latest PCBS Survey on Information and Communication Technology (2006) revealed that 45.1% of individuals aged 10 years and older read the daily newspapers and 41.2% read magazines. There are also a number of weekly and monthly periodicals specialized in topics related to politics, economics, literature and teen-magazines. However, the publication of many of those periodicals is irregular due of the lack of a sufficient customer base.

3.2.4 Economic and Institutional Regime

The economic and institutional regime that is prevalent in a given country is of critical importance for its ability to transform into a knowledge economy. In this section, we will review a set of economic and institutional factors in the Palestinian context including the banking system, stock market, trade, development plans and strategies and the status of corruption.

1. The Banking System

The development of the banking sector in the Palestinian Territory was initially characterized by weakness and irregularity in its structure and activities due to the political circumstances prevalent in the country. Between 1948 and 1967, there were 8 operating banks with 32 branches in the West Bank as well as 6 banks with 7 branches in the Gaza Strip. Subsequent to 1967, all banks in the West Bank and the Gaza Strip were closed and replaced by Israeli banks; 6 banks with 39 branches. With the outbreak of the Intifada, Israeli banks[10] were forced to pull out from the Palestinian Territory because Palestinians rejected to do business with them. In 1981, the Bank of Palestine was permitted to operate in Gaza City although it was not allowed to open new branches until 1989. Cairo-Amman bank was allowed to operate in Nablus in 1989 and henceforth branched out in many Palestinian cities. These banks, however, Israel did allow to function as intermediaries between borrowers and depositors. Their main function was, in fact, restricted to facilitate the commercial operations of Palestinians as well as to hold deposits.

The signing of the Paris Protocol on economic relations between the PA and Israel in 1994 gave the PA the right to establish their own Monetary Authority and regulate monetary policy in Palestine. After the establishment of the PMA, the banking sector witnessed substantial growth as many banks were reopened and the number of bank branches increased. In 1994, the number of banks operating in the Palestinian Territory was 8, with 34 branches; two national banks with 9 branches and 6 foreign banks with 25 branches. Today, there are 22 banks operating in the Palestinian Territory with 153 branches (see table). Despite turbulent economic conditions in the Territory, banks proved to be resilient and constantly found a way to survive. One of their main mechanisms to circumvent the political and economic instability in the country was to invest the largest share of their capital abroad at the expense of local investment. Ultimately all banks shifted the bulk of their capital abroad, which deprived the local economy from the much needed investment opportunities. Banks' foreign investment reached high levels until the PMA stepped in and mandated that banks foreign investment should not exceed 65% of their entire investment portfolio. To a large extent, the PMA has succeeded in its endeavor to bring down the percentage of banks' foreign investment around the permitted rate.

Overall, the banking sector has matured and has come a long way since its modest performance in 1994. Total bank assets by the end of 2006 reached US$5573.5 million, total credit facilities reached US$1903.3 million, foreign investment by banks reached US$2424 million and total deposits amounted to US$4662.7 million.

Table: The Number of Banks and Bank Branches in the Palestinian Territory 1995-2006

Year	Governorate	Number of Banks			Number of Branches		
		National	Foreign	Total	National	Foreign	Total
1995	Northern	4	10	**14**	5	33	**38**
	Southern	2	0	**2**	9	10	**19**
	Total	**6**	**10**	**16**	**14**	**43**	**57**
2000	Northern	7	11	**18**	33	52	**85**
	Southern	2	1	**3**	19	16	**35**
	Total	**9**	**12**	**21**	**52**	**68**	**120**
2006	Northern	9	10	**19**	54	58	**112**
	Southern	2	1	**3**	25	16	**41**
	Total	**11**	**11**	**22**	**77**	**72**	**153**

Source: Palestine Monetary Authority, Statistical Bulletin, various issues.

[10] Except for Mercantile Discount Bank which continued to operate in Bethlehem until December of 2000.

Regarding the infrastructure that supports the banking sector, there is no shared infrastructure for the payment system among banks operating in Territory. Each bank is connected through the SWIFT system and has accounts with the PMA. There is no private credit information market. The PMA collects information from banks on any borrower with a loan with a principal amount exceeding $10,000.This information is made available only to other banks. In addition, PMA has a black list for bank customers who issue checks without having sufficient funds. This list is circulated to banks and is deemed to be confidential and for the use of banks only. The PMA has introduced a computerized private banking network linking all banks in Palestine. PMA has also developed a credit information data base for use by banks, which includes 270K credit information. Finally, PMA is implementing a Real Time Gross Settlement System (RTGS), which will reduce the time for banks' transaction settlements.

Although the International Monetary Fund has expressed some concern regarding the low percentage of deposits kept by banks in the West Bank and Gaza, and the consequent risk to Palestinian depositors, the PMA does not view the establishment of a deposit insurance fund as a matter of urgency at this time. Finally, a single bank has implemented online banking services; however, it only provides a limited set of online banking services which include balance inquiry, transfer within accounts, and ordering checkbooks. Other banks are contemplating introducing online services although most banks believe that the demand for such services is rather limited. The majority of banks offer ATM services and the PMA have required that all new banks must introduce ATM service as a prerequisite for operating.

In lieu of the absence of a national currency, banks operating in the Palestinian Territory transact in three different currencies: the US dollar, Israeli shekel and the Jordanian dinar. The absence of a national currency has deprived the PMA from the key role of controlling money supply as a tool to mitigate economic problems such as reducing inflation and unemployment and encouraging investment opportunities. Further, it deprived the PMA from controlling the volume of currency transactions as well as influencing interest rates which is considered a key monetary policy tool. Therefore, the role of the PMA was limited to supervising bank operations with the aim of protecting and advancing its role in the development of the Palestinian economy.

In terms of supervision and monetary disclosure, PMA has established basic regulations for developing the supervisory framework so that the banking system is consistent with international accounting standards. This was mainly accomplished by means of preparing monthly and annual surveys in cooperation with the IMF. In addition, the PMA has focused on the development of human skills in the banking sector by establishing a modern institute for monetary and financial studies. More importantly, the PMA has maintained the free flow of capital, unrestricted transfers and foreign exchange to and from the Palestinian Territory, to ensure the integration of the Palestinian banking system with international markets, and to attract capital transfers for the local development process.

2. The Stock Market

The Palestine Securities Exchange (PSE) was established in 1995 with the Palestine Development and Investment Company (Padico) as a major investor. It started its first live trading session on February 18, 1997. The main purpose of the Palestine stock exchange is to provide the foundations for a Palestinian capital market and to repatriate long-term capital from the Palestinian Diaspora.

The market managed to attract foreign investment funds, causing HSBC bank to sign an agreement in 1999 to provide full custodian and clearing services to foreign investors. Upon its launch in 1997, only a few companies were listed on the stock exchange and their number rose to

37 by mid 2007. The list of publicly traded companies covers a wide array of economic activities including, banking, insurance, industry, and services. Eight licensed brokerage firms with branch offices in major Palestinian cities have been approved by PSE to trade on behalf of their clients.

PSE uses the latest computing technology in order to operate and manage all trading, clearing and settlement operations. PSE employs a fully automated computerized trading system, through which orders are entered via various remote workstations placed at the members' premises throughout Palestine. Sell and buy orders entered in such a manner are time-stamped based on their time of arrival, and queued for execution according to a set of priority rules and guidelines. The trading system is monitored by a surveillance system which operates under trading rules set by the Exchange to insure transparency and fair trading. In April 2007, PSE officially launched e-trading (the buying and selling of PSE stocks via the internet). This step is expected to increase the volume of trading on the PSE and attract new investors from abroad.

The performance of the market improved substantially over the years. Market capitalization increased from over half a billion dollar in 1997 to around US$4.5 billion by the end of 2005. Daily average turnover increased form 381 thousand dollars to 8.5 million dollars during the same period. Al-Quds Index increased from 139.13 points to reach 1128.59 by the end of 2005 (See table). There is no doubt that 2005 was a bull year for the stock market as well as the rest of stock markets in the Arab world. However, PSE plummeted in 2006 in the advent of the Israeli measures against the Palestinian people which intensified the isolation of Palestinian cities combined with the international boycott of the Hammas led Palestinian government.

Table: Annual Market Activity: Selected Indicators 1997- 2006)

Year	Volume	Value (USD)	No. of Trading Sessions	No. of Transactions	Daily Average Turnover Value (US$)	Market Capitalization (USD)	Al - Quds Index	Al - Quds Index Yearly Growth
1997	10,000,276	25,158,471	66	1,957	381,189	529,057,368	139.13	----
1998	16,782,498	68,642,344	100	7,639	686,423	587,876,243	154.98	11.39%
1999	68,892,607	150,243,919	146	10,625	1,029,068	848,935,775	236.76	52.77%
2000	93,351,075	188,982,443	211	20,143	895,651	766,018,025	207.62	-12.31%
2001	33,456,535	74,528,351	161	8,205	462,909	722,631,785	195.00	-6.08%
2002	18,666,938	45,084,654	100	4,579	450,847	576,593,466	151.16	-22.48%
2003	40,350,788	58,326,445	223	10,552	261,554	650,468,928	179.81	18.95%
2004	103,642,845	200,556,709	244	27,296	821,954	1,096,525,380	277.56	54.36%
2005	369,567,295	2,096,178,223	246	166,807	8,521,050	4,457,227,305	1128.59	306.61%
2006*	122,249,448	714,963,208	141	83,005	5,070,661			
Total	876,960,305	3,622,664,767	1,638	340,808				

Source: Palestinian Securities Exchange, 2007.

In 2005, the Palestine Capital Market Authority (CMA) was created with the aim to supervise and regulate the stock exchange, insurance, finance leasing and other non-banking financial institutions. Despite the turbinate conditions in the Palestinian Territory, CMA and PSE continued their efforts to improve the transparency and efficiency of the market. On the legislative front, rules regulating corporate actions disclosure were enforced, resulting in the temporary suspension of some companies from trading. Operationally, a new satellite office was opened and an improved website was launched. Both actions were aimed at improving customer

service and enhancing the interaction between investors, regulators and publicly traded companies.

All in all, trading on the PSE is volatile, as trading volume witnessed periods of extremely infrequent and heavy trading. The volatility is the product of rapidly changing sentiment that was heavily influenced by the unstable political situation. PSE may be characterized by low liquidity as well as less informed investors. Such market attributes casts serious doubts on the efficiency of the stock market in Palestine.

3. Palestinian Trade

The Signing of the Paris protocol in 1994 set the procedures and regulations governing economic relations between the Palestine and Israel. The agreement states the principles of free trade with Israel and regulates the relationship between Palestine and the rest of the world as follows according to the following criteria:

- Palestinian products are not subject to any export restrictions.
- Trade to and from the Palestinian Territory has full access to Israeli ports of entry and exit.
- Palestinian imports and exports are granted equal treatment at the Israeli ports of entry and exit, except from security measures.

As for the import policy, the Israeli regulations on customs, purchase tax and standards apply to Palestinian imports with the exception of goods listed in A1, A2 and B[11]. The PA has the right to apply, within pre-defined quotas, its customs rates, purchase tax and other import charges on those imports. In addition, the PA has the autonomy in importing goods listed in A1 and A2 regardless of Israeli standard requirements.

A result of applying the Israeli import policy is that bilateral trade agreements between Israel and other parties are considered valid in the Palestinian Territory. Currently, Palestinian traders can benefit from free trade agreements with Slovakia, Hungary, Turkey and the Czech Republic.

Israeli import policy prohibits trade with several countries, mainly those that do not have diplomatic relations with Israel, including a number of Arab States. The only exception to the Palestinian Territory is represented by imports in list A1, A2 and B.

The PA has the freedom to negotiate and conclude trade agreements, for the benefit of the PA, as long as the same import policy is applied in Israel and the Palestinian Territory.

The Palestinian Authority has adopted the principle of free trade as the cornerstone of its economic policy as stated in article 21 of the Basic Law which states that′ *the economic system in Palestine shall be based on the principles of free market economy*′. In its efforts to strengthen economic ties with the international community and to promote economic and trade development, the PA has conducted trade negations with a number of countries, including many Arab countries and other international economic groups. The list of trade agreements includes the United States of America, Canada, the European Union, Russia, EFTA countries, Egypt, Saudi Arabia and Jordan. Unfortunately, The Palestinians did not actually reap the benefits from the trade agreement because Israel did not abide by the Paris Protocol and worked diligently to obstruct the flow of Palestinian trade.

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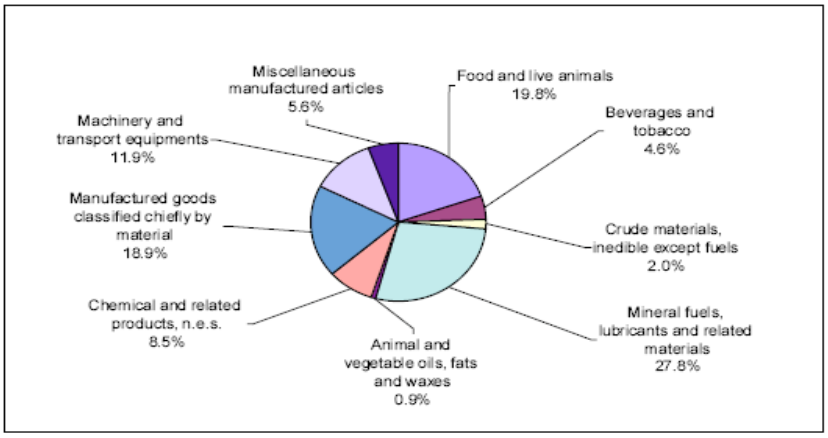
[11] Goods Imported under List A1 must be locally produced in Jordan, Egypt or in other Arab Countries. Goods Imported under List A2 can be imported from Arab, Islamic or other countries. Finally, goods Imported under List B are not subject to quantitative restrictions but are subject to Israeli standards.

The World Bank reports that over the past six years imports of goods and services represented approximately 70% of GDP while exports of good and services represented between 15% and 20% of GDP (World Bank and Gaza Update, March 2004). The poor performance of the trade sector is largely attributed to Israeli policy in the Palestinian Territory, which is largely aimed at destroying the economic foundations in the Territory. Israel placed restrictions[12] on the movement of people and goods within the West Bank and between the West Bank and the Gaza Strip as well as restriction between the Palestinian Territory and the rest of the world. These restrictions were intensified over time, and developed gradually into today's complex set of controls. Moreover, Palestinians are obliged to rely on Israeli intermediaries to transport their goods and, therefore, do not pay purchase taxes and customs to the Palestinian Authority.

Foreign trade data published by PCBS (2005) indicate that Palestinian imports and exports had increased in 2004 compared to 2003 by 31.8% and 11.8%, respectively. Net trade balance deficit registered US$2,060.6 million in 2004 compared with US$1,520.6 million in 2003. About 28% of the imports in 2004 were from mineral fuels, lubricants and related materials. Manufactured goods represent 18.9% of total imports, food and live animals represent 19.8% of total imports, imports of machinery and transportation equipments comprised 11.9% of total imports.

Figure: Distribution of Imports in the Remaining West Bank and Gaza Strip

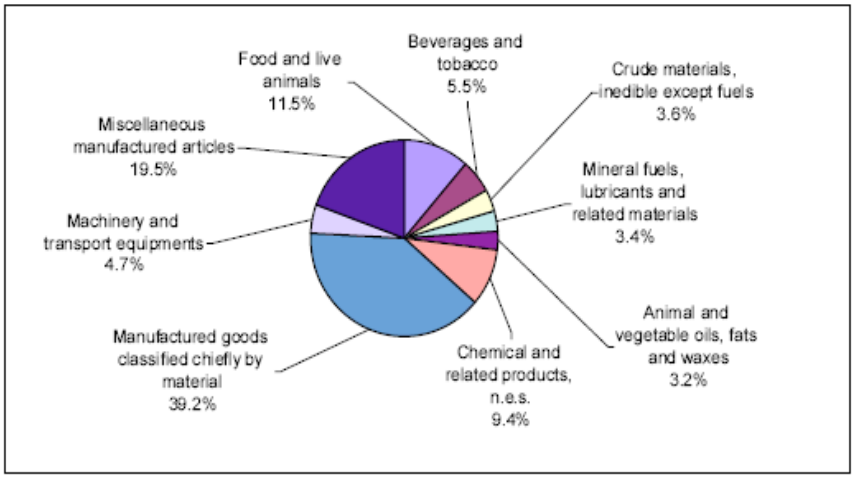


Source: Palestinian Central Bureau of Statistics, Foreign Trade Statistics; Main Results, 2004

On the other hand, manufactured goods represent 39.2% of exports in 2004 with an increase of 11.0% compared to 2003. Miscellaneous manufactured articles represent 19.5% of exports with an increase by 19.8%, exports of food and live animals represent 11.5% of total exports with an increase by 4.8%.

[12] Restrictions on Palestinian movement can be divided into three types: permits; physical impediments and the separation barrier.

Figure: Distribution of Exports in the Remaining West Bank and Gaza Strip



Source: Palestinian Central Bureau of Statistics, Foreign Trade Statistics; Main Results, 2004.

Data indicate that Asian countries remain, with Israel having the largest share, the major trade partner with regards to imports, as 84.5% of Palestinian imports came from Asian countries. Commodity imports from European Union countries increased by 32.7% to comprise 8.6% of total commodity imports, while merely 1.5% of imports came from Arab countries, an increase of 30.6% compared to 2003.

Regarding exports, data show that 90.5% of exported commodities in 2004 went to Asian countries with an increase of 13.1% compared to 2003. Moreover, exports to African Arab Countries increased by five fold compared with 2003. Direct exports to European Union Countries decreased by 1.2% compared with 2003. Imports and exports of services increased in 2004, the increase in service imports was 52.7%, while exports in services increased by 26.6% compared to 2003.

4. The Legal and Judicial Systems

The Palestinian legal system is influenced by multiple legal systems, which have affected the entire political and legal structure in Palestine as a result of the various legal systems that prevailed in the country throughout its modern history. Up until the end of the Ottoman rule, the legal system in Palestine was primarily based on the principles of the Islamic law and to some degree influenced by the legal system in Europe. In 1917, the British Mandate reformed the legal system in Palestine and replaced it with principles of the Common Law. In 1948, when Jordan ruled over the West Bank and East Jerusalem, the Jordanian law which was influenced by the Latin system was applied. On the other hand, as Egypt controlled the Gaza Strip, the Common Law remained in effect there. Following the 1967 war, The Israeli occupation seized control of the Palestinian legal system by imposing Military Orders in the West Bank and Gaza Strip. Moreover, after annexing East Jerusalem in 1980, Israel subjected East Jerusalem to the Israeli Domestic Law. With the signing of the Oslo Accord in 1993, Palestinian legislation has been enacted for the West Bank and the Gaza Strip. Since 1994, numerous legislations were signed into law to regulate Palestinians' everyday life and consolidate the laws between the West bank and Gaza Strip. Such laws focus on administrative, regulatory, commercial and financial matters as well as issues pertaining to land, services, health, education and political issues.

On the judicial front, the High Judicial Council was established. The council is comprised of a group of judges from the West Bank and Gaza Strip. Courts are divided into regular, religious and special courts, in addition to the Supreme Court of Justice which examines administrative disputes. The Court of Appeal in Ramallah is deemed to be the highest regular court and its decisions are ethically binding to lower courts. Moreover, this court implements the legislation effective in the West Bank. In the Gaza Strip, the Supreme Court is the highest regular court and its decisions are deemed as judicial precedents. It also enforces the legislation that is effective in Gaza.

The Palestinian Legislative Council (PLC) is the first elected body in the history of the Palestinian people. It is comprised of 132 elected members. The council is responsible for the processing of legislation and executive powers as stipulated in Articles VII and IX of the Declarations of Principles. Its jurisdiction covers the West Bank, Gaza strip and East Jerusalem as a single territorial entity. As of Nov. 2005, 85 laws have been passed and signed, while another 7 are awaiting signature by the President while others were pending in their readings or reviews by the PLC.

Following is a list of economic and financial laws approved by the PLC:

- Law of the General Union of Palestinian Industries and Industrial Federations Specialist, law no. 2 of 2006.
- The public debt Law, law no. 24 of 2000.
- Insurance Law, law no. 20 of 2005.
- Illicit Gain law, law no. of 2001.
- Income Tax Law.
- Law Office of Financial Supervision and Management, law no. 15 of 2004.
- Law of Capital Market Board, law no. 13 of 2004.
- Securities Law, law no.12 of 2004.
- Practicing Audit Law, law no.9 of 2004.
- The Law amending some omissions of general supply, law no.6 of 2004.
- Specifications and Standards Law, law no.6, 2000.
- Investment promotion Law, law no. 2 for 2004.
- Banking Law, law no. 2.
- Organization of Work for Commercial Agents Law,
- The organization of general budget and financial affairs law, law no. 10/97/1.
- Monetary Authority Law, 6/1997.
- The Law of the Formation of Custom duties, law no. 14 of 1995.
- Law no.8 of 1999 on bidding for government works, law no. 29/27/a.

5. Economic and Development Policies and Plans

In order to reengineer the Palestinian economy after years of occupation, which led to arrested development, the PA devised a number of plans and strategies aimed at achieving sustainable development in the Territory. Following is a brief discussion of the main plans.

a. The Palestinian Medium Term Development Plan

The Palestinian Development Plan covers the medium term economic development strategy. This Plan is updated on a year-to-year basis. It sets the goals, strategies and establishes the general framework within which the PA ministries and institutions can allocate resources. The objectives of the plan cover:

- ✧ The establishment of a legal and institutional framework that will contribute to the development of a market-based economy driven by the private sector.
- ✧ The maintenance of an open economy with the aim of raising the productivity of economic operators in the Palestinian Territory, in addition to gaining access to external markets.
- ✧ The development of human resources mainly through creating more employment opportunities and adopting sectoral strategies.
- ✧ The progressive integration in regional and multi-trade agreements.
- ✧ The promotion of the economy's competitiveness through developing new technologies to comply with international standards.

b. Investment Promotion

In order to encourage domestic and foreign investment in the Palestinian Territory, the PA has taken three measures;

1. ***Investment Incentives***
   The Law for the Encouragement of Investment offers a series of incentives based on the amount invested capital and the labor force employed. It fully exempts investors from income tax according to the amount and length of investment. It also allows for free transfer of foreign currency and repatriation of income generated in the Palestinian Territory. The law applies uniformly to all investors, irrespective of their nationality.

2. ***Industrial Estates and Free Zones***
   The Law on Industrial Estates and Industrial Free Zones creates free zones for export activities geared to regional and international markets. An independent and autonomous body was set to oversee these zones. The first such estate, The Gaza free Zone, was opened in late 1988 on a 50-hectre site on the border with Israel. It will be developed in three phases and should eventually generate 20,000 jobs directly and another 30,000 indirectly.

3. ***Investment Guarantees***
   The Multilateral Investment Guarantee Agency has set up the West Bank and Gaza Investment Guarantee Trust Fund. This provides eligible private investors with guarantees against political risk (expropriation, war and civil turbulence). The ceiling on this guarantee is US$ 5 million per project.

6. Corruption

The perception of corruption in the Palestinian Territory is similar to many developing countries. According to Transparency International Perception Index 2005, Palestine ranks 107 out of 159 countries. Corruption, however, is perceived to be the gravest within the public sector. This corruption may be attributed to the fact that with the arrival of the PA in 1994, many posts and positions were opened in the public sector while there was no legal framework to regulate the process of appointments. In addition, due to Israeli restrictions on travel between the West bank and the Gaza strip, the PA was compelled to have parallel departments in the West bank and the Gaza Strip. This duplication of institutions and staff gave way for corruption activities to take place. In addition, the PA lacks the political well to fight corruption (Qazzaz, 2007).

Anticorruption Measures and Mechanisms

The Palestinian Authority has set in place a number of measures and mechanisms to fight corruption. The following is a list of such measures.

- The Basic Law addresses the issue of assets disclosure for top level PA officials. Article 82 of the Basic Law states that *'the prime Minister and each Minister shall submit a financial statement for himself, his wife and dependant children, detailing what they own of real estate, transferable property, stocks, bonds, cash money and debts, whether inside Palestine or abroad, to the President of the PA, who shall make the necessary arrangements to keep its secrecy'*.
- The Law of Illicit Enrichment No. 1 of 2005 organizes the disclosure of assets for top officials, including the President, the prime minister, ministers, judges, attorney general and prosecutors, high level employees, and any other officials that the Council of Ministers decides to subject to the provisions of the law.
- The Supreme Audit Commission ' financial and administrative auditing bureau' oversees all PA entities.
- The Palestinian Independent Commission for citizens' rights ensure the rule of law, contributes to the building of legal institutions, propose and review legislation to ensure the basic rights and freedom of citizens, and to monitor the activities of the PA and all other public bodies and institutions for any abuse of authority, misuse of public funds and violations of fundamental rights and freedom of citizens.
- Civil society organizations such as the Coalition for Accountability and Integrity-AMAN, which was established as a group of Palestinian civil society organizations to ensure integrity, transparency and accountability in Palestine.

4. Conclusions

The best way to summarize the readiness of the Palestinian economy to transform into a knowledge economy is to highlight the strengths and weaknesses associated with each and every pillar.

4.1 The Labor Force and the Education System

Strengths

- The number of children attending basic and secondary schools increased by 25% between 2000 and 2006.
- Enrollment in basic education is universal and gross enrollment ratio for secondary education is above 80%.
- Almost all children up to the age of 12 are attending school and have access to secondary education that is highly equitable with regard to gender.
- Repetition rates in the Palestinian Territory are low by regional standards; for the basic grades repetition rates is 1.1% at public schools, 2.4% at UNRWA schools and 0.4% at private schools and lower than 1% in secondary grades.
- Transition rates to secondary education have been in excess of 90% over the last five years.
- 80% of Tawjihi graduates who pass the general examination go on to some kind of post-secondary education or training.
- New school curricula have been implemented for basic and secondary education. Innovations in the new school curricula include being the first Arabic country to teach English starting from the first grade, technology courses are introduced starting from the 5^{th} grade all the way through the 12^{th} grade, home economics, environment and health are introduced in grades 7-10 as electives, and economics and management are introduced in the 11^{th} and 12^{th} grades.
- Half of basic and secondary schools have computer laboratories and 70% of them have access to the internet.
- 54% of schools have school libraries and 50% have science labs.
- Illiteracy rate is declining; it decreased form 15.7% in 1995 to 6.5% in 2005.
- Palestinian children who participated in international tests (Trends in International Mathematics and Science Study-TIMSS) scored above the average for MENA countries.

Weaknesses

- High unemployment rates in the Territory with females being more affected than males in the job market.
- Enrollment in the arts stream has increased at the expense of the scientific and vocational streams. About 75% of students who pass the Tawjihi examination are from the literacy stream.
- Engineering enrollment as a percentage of total enrollments in traditional universities dropped from 8.6% in 1991 to 6.8% in 2005. Similarly enrollment in sciences dropped form 14.6% to 11.2% during the same period.
- Enrollment in vocational education is relatively low in comparison to traditional universities.
- The Palestinian education system is rigid and emphasizes rote-learning.

- ✧ Shortage in computer science teachers; 400 IT teachers which represent only 50% of the demand for IT specializations in schools.
- ✧ Palestinian households are assuming a larger share of the educational burden especially in light of the current funding crises faced by the PA (an increase from 3.3% in 2000 to 6.1% in 2003).
- ✧ Limited opportunities for training in the Palestinian Territory.
- ✧ Illiteracy rates are more widespread amongst females compared to males. Female illiteracy rate registered 10.2% in 2005 compared to 2.9% for males.

4.2 Research and Development (Innovation)

Strengths

- ✧ A national policy for science and technology has been drafted but still needs to gain consensus in the community as well as a clear action plan.
- ✧ The establishment of key institutions that serves as the backbone of research including PCBS and PALAST.
- ✧ NGOs are playing a leading role especially in development studies and social research**.**

Weaknesses

- ✧ Research in the Palestinian context is limited in volume, relatively poor in quality and lacks a clear direction.
- ✧ Research is not yet considered a national priority.
- ✧ Research published by university academics is in short supply; 0.75 publications per university researcher per year.
- ✧ Scientific research is extremely limited in volume.
- ✧ Existing social research is to a large degree tied to donors' agenda**.**
- ✧ The absence of intellectual property right laws, which is critical for developing a system of innovation in Palestine.
- ✧ Lack of cooperation among active research centers and institutions which leads to a great degree of duplication in research activities.
- ✧ Lack of specialized professional expertise in a variety of research topics.
- ✧ The sector is short on funds and therefore research centers are unable to provide for the necessary facilities and offer incentives to attract and retain researchers.
- ✧ Poor links between the research community and the private sector, which have eliminated decent possibilities for applied scientific research.
- ✧ University professors have a high teaching burden which prevents them from active involvement in research.

4.3 ICT Infostructure and Infrastructure

Strengths

- ✧ The establishment of the Palestinian Internet Naming Authority.
- ✧ The acquisition of a Top Level Domain (.ps).
- ✧ The acquisition of an international code (970) for Palestine
- ✧ In 2005, about 98% of Palestinians are living in areas covered by telephone services.
- ✧ The number of Jawwal Cellular phone subscribes reached 820 thousand in 2006.
- ✧ An agreement had been signed with a second cellular company (Al-Wataniya) to increase competition in the telecommunication market.

- ✧ The number of households who own PCs increased to 32.8%. More than half of individuals aged 10 and over owner PCs.
- ✧ 70.7% of children aged 10-17 years use computers.
- ✧ No internet censorship.
- ✧ 50.8% of households have fixed telephone services and 81% have mobile phones.
- ✧ About 300 internet cafes are scattered in the Palestinian Territory. ADSL subscribers exceeded 40 thousand in June of 2007 with a penetration rate of 12.6%, the second in the Arab world.

Weaknesses

- ✧ The Palestinian telecom market is unregulated; no supervisory authority exists.
- ✧ Paltel does not own its own International Direct Line Gateway.
- ✧ Israel still holds control over the Palestinian frequency and the Palestinian access to the World Wide Web.
- ✧ Israel still illegally controls 56% of the Palestinian cellular market.
- ✧ Israeli imposes restrictions on high tech imports.
- ✧ Computer illiteracy in the Palestinian context is still high although female computer illiteracy is higher than males' (54% compared to 45%).
- ✧ Hadara dominates the ISP market which allows it to solely control the market and set prices.
- ✧ Limited competition in the Palestinian telecom market and the lack of regulation.
- ✧ To date, no independent supervisory authority has been actually activated on the ground.
- ✧ Despite the fact that a national ICT strategy has been created, there has been no clear implementation plan for the strategy.
- ✧ The lack of IPR laws to protect investment in the IT sector and encourage the flow of foreign direct investment in the sector.

4.4 Economic and Institutional Regime

Strengths

- ✧ A good banking system that is comprised of 22 banks with 153 branches with no restrictions on capital mobility.
- ✧ A modern stock market that adheres to best international standards. E-trading was recently introduced to increase efficiency and provided better customer service.
- ✧ The PA has adopted the principles of free trade as a cornerstone for economic development.
- ✧ A number of trade agreements have been signed with the USA, EU, Russia, EFTA, Egypt, Saudi Arabia and Jordan.
- ✧ The foundations for the legal and judicial framework are in place (PLC, court system, etc.)
- ✧ A medium–term development plan for the Palestinian territory is put in place to insure economic development.
- ✧ An investment promotion package has been implemented through three mechanisms: providing investment incentives, the creation of Industrial Estates and Free Zones and establishing investment guarantees.
- ✧ A number of measures have been set in place to fight corruption (Article 82 of the Basic Law, Law of the illicit enrichment No. 1, 2005, the Palestinian Independent Commission for Citizens Rights, the Supreme Audit Commission and the Coalition for Accountability and Integrity- AMAN).

Weaknesses

- The majority of banks still have not implemented online banking services.
- The limited role of the PMA in setting monetary policy due to the absence of a national currency.
- No shared infrastructure for payment system among banks, no private credit information market and no insurance fund.
- The stock market is highly volatile, many stocks exhibit infrequent trading and the Palestinian investors is less informed.
- Israel impedes the flow of Palestinian trade which renders many of the trade agreements fruitless.
- The Palestinian industry is losing competitiveness as real wages are increasing and productivity is declining.
- Many studies have pointed to the existence of corruption at top level PA officials, although, the degree of corruption is declining. According to Transparency International Perception Index 2005, Palestine ranks 107 out of 159 countries.
- The Palestinian legal system is affected by multiple legal systems, including the Ottoman, Latin, Jordanian and Egyptian.
- Poor rule of law in the Palestinian Territory and ineffective judicial system.
- The absence of ICT related legislation to promote ICT in the Territory.

In short, the Palestinian human capital seems to be exhibiting promising trends and is moving in the right direction although there is still a need to move away from rote-learning and teaching cognitive skills in addition to increasing the number of computers at schools. The ICT sector is progressing but seems in need of upgrading its infrastructure and allowing for more competition and regulation. Research and development is one of the weakest links to transforming to the knowledge economy, followed by the economic and institutional regime in the country.

5. Recommendations

5.1. General Recommendations

- For the Palestinian economy to transform into acknowledge-based economy, a strong and a committed leadership that understands the role of ICT in generating economic growth is of critical importance. Strong leadership is one of the key elements behind the transition of many economies into the knowledge economies such as South Korea, UAE and Jordan.
- Improving the general environment for the flourishing of entrepreneurship is also fundamental. Entrepreneurs represent the engine that drives innovation in any given society. Hence, the government should create a conductive environment to foster and nurture entrepreneurship including the establishment of Incubators, finance entrepreneurs, and provide them with proper training in administrative and technical aspects, etc.
- General economic and political stability in the country must be achieved and the rule of law must be maintained. This will involve negotiating with the Israelis to arrive at a just solution for the Palestinian cause as well as restructuring and enhancing the Palestinian legal system.

5.2 Skilled Labor Force and the Education System:

- Integrating problem solving and cognitive learning in the school curricula to gradually shift away from rote-learning at schools. Special emphases should be placed on teaching research methodology in secondary schools and advocating the value of research and innovation in the society.
- Encouraging enrollment in science and engineering specializations. To achieve this, school, university, government, enterprises and the society in general have to collaborate to make this happen. Universities and vocational institutions have to offer incentives for students to enroll in such specializations which may include scholarships etc.
- Schools should incorporate ICT pedagogical tools into the classroom to make the learning experience more interesting and to expose the use of technology to students.
- Although 50% of schools have computer labs, this ratio needs to be augmented to cover all schools. The government and the private sector should also be involved in this campaign and to contribute PC sets as part of their social responsibility programs.
- Encouraging college students to specialize in IT related subjects in order to fill the need for such specializations in the classroom. Unfortunately most IT graduates are attracted to the private sector because teaches' salaries are generally lower than the rate offered in the private market. Therefore the Ministry of Education should give its pay scheme a closer look to find out how it could provide better incentives to attract IT graduates.
- Businesses should invest more in the training of its employees to improve their skills and increase their productivity. The government should provide incentives for companies to train its staff in the form of tax incentives.
- Establishing a national professional system that recognizes the acquisition of certain professional attainment. Such a program would enhance professional standards and accredit individuals who receive the required training which meets the professional standards.
- Reducing computer illiteracy in the Palestinian context and especially amongst the elderly and females. The appropriate framework to tackle this problem is to carry out a computer literacy campaign throughout the Territory and conduct computer training workshops.

5.3 Research and Development

There is an urgent need to put in place the right legal framework to regulate, foster and encourage research activities in the Palestinian Territory. Hence, related ministries such as the Ministry of culture and the Ministry of National Economy should draft a new IPR law and presented to the PLC through a participatory approach that involves all stakeholders.

- ✧ Placing all research centers under one central umbrella in order to facilitate coordination and work amongst the different research centers.
- ✧ Establishing a national research fund whereby the government, NGOs and private sector contribute to this fund in order to produce research that is more in line with the national priorities.
- ✧ The government could also encourage R&D activities in the private sector by means of granting tax breaks to companies that carry out applied scientific and technical research. In addition, allocating an explicit amount of the national budget to support research activities.
- ✧ Increasing public awareness regarding the importance of research for economic and social development. This could be accomplished by means of advocating the importance of research at schools and universities, especially as schools in particular are lagging behind in teaching research methodologies. The government, through its ministries, could also set up research contests to encourage research and advocate its importance amongst the population at large.
- ✧ The need to establish networks, professional associations, and scholarly forums, for example. There is also a real need for significant increase of scholarly exchange between Palestine, the Arab world and the international community.
- ✧ Tapping on and attracting the Palestinian Diaspora which has achieved great professional success abroad. This might require adjusting and improving on the TOKTEN program to make it more flexible and provide more financial and in-kind compensation for needed talents.
- ✧ Reducing professors' teaching load so as to give them more time to carry out academic research.

5.4 ICT Infrastructure and Infrastructure

- ✧ The establishment of Information Promotion Fund to overcome the budgetary restrictions in order to promote ICT in the Territory. Contributors to this fund may include donors, government and the private sector. This project would promote e-government and R&D activities and educate human resources in IT.
- ✧ The creation of special committees to oversee the planning and implementation of major policies and strategies. For example, the creation of committee to oversee the implementation of the national ICT strategy. This committee must meet periodically to assess the implementation process and make the needed amendments and improvements to the strategy. Another committee should be established to supervise the implementation of e-government project.
- ✧ Drafting ICT related laws and bylaws to ensure the effective diffusion of technology in the Palestinian society and encourage investors to invest in the IT sector.
- ✧ Increasing the pressure on Israel to grant Palestinians their own independent international gateway. Lobbying for this issue should be carried out at the local, regional and international levels and to address this issue at major international IT forums and conferences.
- ✧ Creating international awareness regarding Israeli unfair practices against the Palestinian IT sector in issues related to restricting Palestinian hi-tech imports, unfair competitive practices, etc.

- Moving forward in issues related to the creation of an independent telecommunications regulatory agency. The PNA should set a clear final date for the creation of this regulatory authority.
- Drafting privacy and protection-related laws to encourage internet use and transactions.
- A fast human resource development track is needed to create critical mass of ICT users and developers within the society to spearhead the ICT development process. This includes reinforcing IT courses in schools and colleges, providing pre-service and to introduce market demanded IT specializations at colleges and universities.
- Ensuring that the ICT sector follows international business practices in order to compete at the regional and international levels. This entails educating IT firms of total quality management practices and best marketing and management techniques.
- Attracting foreign investment while trying to penetrate international markets. In this regards, the government needs to review the Investment Promotion Law and accordingly amend its clauses.
- The need to monitor e-developments in the county since the lack of accurate data on the use of ICT and e-commerce by businesses and households is a major obstacle to identifying priority areas of policy action. Therefore, the government should collect, analyze and assess data in addition to benchmarking the performance with other countries.
- Increasing the public-private partnership in the development of the national ICT strategy. A selected group of homogeneous group of experts who can supplement a sound ICT planning and strategy rather than giving preference to selected groups. More specifically, the group may include experts from the private, public and NGO sectors and foreign talents.
- Adopting a holistic approach in the national ICT strategy. A sound and efficient ICT base cannot be established until the country at large wish to do it. Moreover, a national ICT strategy is comprised of a package of measures complementing one another, thus implementing only a few policies would be insufficient, especially that areas where no action was taken might undermine the effectiveness of those policies that were put in place.
- The national strategy should also recognize e-commerce as the national trade strategy that should be included in the plan.

5.5 Economic and Institutional Regime

- The Palestine Monetary authority must invest in a modern and efficient payment system that links all banks together. Moreover, private credit information should be readily available.
- Carrying out negotiations with the Israelis to facilitate Palestinian trade within the Territory and abroad to effectively benefit from the free trade agreements that have been signed with many countries.
- A number of laws are needed so as to regulate certain sectors and promote investment in the Territory. Most important is intellectual property rights and industrial property rights and other ICT related laws such as the Electronic Transactions Law and the Electronic Authentications Law to promote investment in the sector and to protect the consumer.
- The rule of law needs to be enforced and more efforts are required to fight corruption particularly in the public sector, in addition to the reactivation and reform of the judicial system.

6. The Presence of KBE Characteristics in Jordan

6.1 Overview of the Jordanian Economy

In this section of the report we shed the light on the main characteristics of the Jordanian economy.

6.1.1 General Macro-Economic Environment

Macroeconomic stability has been maintained over the last decade despite the Gulf crises and the unrest in Palestine. Gross Domestic Product (GDP) continued to grow during the last decade as indicated in table 1. In 2005, GDP per capita amounted to JD 1,647. Projections for the coming half decade expect that real GDP growth will continue to increase. Growth was generated in the service sector, mainly the expansion due to the construction sector and the modest growth in light manufacturing output.

Table 1: Gross Domestic Product at Current Prices (JD Million) (1993-2005)

Year	GDP at Market Prices	GDP Per Capita
1993	3,884	967
1994	4,358	1,053
1995	4,715	1,106
1996	4,912	1,121
1997	5,137	1,140
1998	5,610	1,213
1999	5,778	1,220
2000	5,999	1,235
2001	5,470	1,278
2002	5,849	1,333
2003	6,301	1,382
2004	7,186	1,511
2005	7,956	1,647

Source: Central Bank of Jordan, Monthly Statistical Bulletin, September, 2006

The main concern of the government in Jordan is to maintain price stability so that the country will benefit from a stable and competitive exchange rate and further cuts in nominal interest rates. However, the annual inflation rate has increased in the year due to the continued increases in oil-derivatives.

Projecting inflation and interest rates is difficult especially in view of the uncertainty surrounding the budget, monetary policy, and the foreign debt situation in developing countries.

Published data by the Central Bank of Jordan do not provide an adequate basis for projecting inflation rates across sectors of the economy. However, projections of nominal personal income offer an alternative and more accurate portrayal of economy-wide growth inclusive of any

anticipated price level changes. Using the moving averages for the period extended from 1991 to 2006, the trends show that inflation rates in Jordan would be around 3.6% (table2). Also, using the Consumer Price Index (CPI) as a proxy for the change in annual household expenditure puts the projected inflation rate for the coming years around 4.0%. The annual variation in the CPI during the last four years was around 4%.

Table 2: Inflation Rates in Jordan (1993- -2006)

Year	Inflation Rate (%)
1993	3.2
1994	3.6
1995	2.2
1996	6.6
1997	3
1998	3.1
1999	0.6
2000	0.7
2001	1.8
2002	1.8
2003	1.6
2004	3.4
2005	3.5
Aug-06	6.3

Source: Central Bank of Jordan, Monthly Statistical Bulletin, September, 2006

Table 3 shows the detailed structure of interest rate in Jordan during the period extended from 2001 to 2006. It is clear from the table that the interest rate did not change drastically during the last five years. During this period, the prime lending rate was 6-7% which encouraged many Jordanians to get new mortgages and significantly contributed to the boom in the construction sector in Jordan.

Table 3: Weighted Average Interest Rates: on overdrafts, loans, discounted bills and prime lending rate

Period	Overdrafts	Loans and Advances	Discounted Bills & Bonds	Prime Lending Rate*
Aug-06	9.48	8.27	8.49	6.75
Jul-06	8.74	8.22	8.54	6.75
Jun-06	8.69	8.02	8.38	6.75
May-06	8.46	7.99	8.23	6.75
Apr-06	8.25	8.05	8.39	6.75
Mar-06	8.38	8.13	8.08	6.75
Feb-06	8.35	7.89	8.39	6.75
Jan-06	8.09	7.98	8.14	6.75
2006 (average of Jan-Aug)	8.56	8.07	8.33	6.75
2005	9.26	8.10	7.92	7.00

Period	Overdrafts	Loans and Advances	Discounted Bills & Bonds	Prime Lending Rate*
2004	8.79	7.59	8.98	6.00
2003	9.43	8.92	10.24	6.50
2002	9.35	9.85	10.95	7.25
2001	10.42	10.45	11.88	8.00
* Represents the minimum prime lending rate for credit extended by licensed banks				

Source: Central bank of Jordan, Monthly Statistical Bulletin, September, 2006

The exchange rate policy stayed unchanged during the last decade to enhance the JD stability. Actually, there is no parallel market exchange rate in Jordan. Interest rates were stable during last two year except for few adjustments.

1. The Composition of GDP

The Jordanian economy is characterized by the production of traditional goods and services. Table 4 shows that the key economic sectors in Jordan are the service sector followed by the manufacturing. Agricultural and mining play a minimal role in the Jordanian economy and the government is the largest employer of civil and military personnel.

Table 4: Industrial Origin of Gross Domestic Product at Market Prices (2001-2005)

Sector	2001	2002	2003	2004(1)	2005(1)	as % of GDP (2005)
Agriculture	124.3	148.9	178.3	202.1	223.3	**2.7%**
Mining and Quarrying	176.4	188.7	192.1	230.4	263.0	**3.2%**
Manufacturing	861.2	987.7	1,082.6	1,313.6	1,527.7	**18.7%**
Electricity and Water	140.6	156.6	161.2	189.4	206.5	**2.5%**
Construction	231.0	251.7	268.3	324.4	358.9	**4.4%**
Trade, Restaurants and Hotels	618.6	635.0	652.7	746.5	837.9	**10.2%**
Transport and Communications	907.2	934.9	1,015.6	1,179.1	1,294.4	**15.8%**
Finance, Insurance, Real Estate & Business Services	1,136.1	1,236.2	1,311.3	1,444.4	1,565.9	**19.1%**
Social and Personal Services	250.8	292.6	309.9	347.8	375.8	**4.6%**
Producers of Government Services	1,077.1	1,141.4	1,255.9	1,338.6	1,439.3	**17.6%**
Producers of Private Non-Profit Services for Households	58.2	63.0	64.8	74.4	77.4	**0.9%**
Domestic Household Services	11.5	12.5	13.9	14.6	15.1	**0.2%**
Less: Imputed Bank Service Charge	-123.0	-199.8	-205.3	-219.7	-229.0	
GDP at Basic Prices	5,470.0	5,849.4	6,301.3	7,185.6	7,956.2	
Net Taxes on Products	893.8	944.6	927.4	895.7	1,056.0	
GDP at Market Prices	6,363.8	6,794.0	7,228.7	8,081.3	9,012.2	
Net Factor Income From Abroad	132.9	85.0	83.9	165.0	266.4	
GNP at Market Prices	6,496.7	6,879.0	7,312.6	8,246.3	9,278.6	
Per Capita Gross Domestic Product at current prices	1,278.4	1,332.7	1,382.2	1,510.5	1,646.7	

Source: Central Bank of Jordan, Monthly Statistical Bulletin, 2006

2. The Composition of National Exports

Table 4 shows domestic exports by product during the period 2001-2005. The total value of domestic exports continued to increase during the reported period. Total exports increased from JD 1.4 billion in 2001 to JD 2.6 billion (US$ 3.7 billion) in 2005. Export f.o.b. value is estimated at $4.798 billion for the year 2006. The main exported commodities include: clothing, pharmaceuticals, potash, phosphates, fertilizers, vegetables and manufactured goods. Jordan main exports partners are the USA representing 26.2% followed by Iraq 17.1%, India 8.1%, Saudi Arabia 5.9%, Syria 4.7%.

Table 4: Main Economic Indicators (Domestic Exports by Commodity) in Thousand JD

Exported Items	2001	2002	2003	2004(1)	2005(1)
Total	**1,352,371**	**1,556,748**	**1,675,075**	**2,306,626**	**2,558,685**
Food and Live Animals	**135,530**	**141,316**	**156,641**	**200,879**	**274,949**
Live Animals	4,320	7,627	10,071	10,628	10,674
Dairy Products and Eggs	7,167	5,646	8,044	9,243	29,435
Cereals and Cereal Preparations	2,078	1,274	2,835	6,972	7,271
Vegetables	82,283	95,296	99,480	127,691	158,666
Fruits and Nuts	12,110	11,744	11,508	13,358	23,924
Fodder	15,610	8,606	6,702	10,454	6,451
Beverages and Tobacco	**22,773**	**30,293**	**44,771**	**41,456**	**47,699**
Beverages	6,189	3,348	14,802	11,533	22,742
Tobacco & Manufactured Tobacco Substitutes	16,585	26,944	29,969	29,923	24,957
Crude Materials, Inedible,					
Except Fuels	**250,165**	**252,324**	**258,607**	**310,156**	**349,033**
Phosphates	90,485	96,446	90,810	117,731	118,975
Potash	138,334	136,744	144,832	163,505	196,138
Mineral Fuels, Lubricants					
and Related Materials	**149**	**99**	**4,613**	**15,735**	**4,656**
Animal and Vegetable Oils, Fats					
and Waxes	**42,735**	**67,819**	**41,775**	**112,957**	**72,254**
Vegetable Fats or Oils and Their Fractions					
Hydrogenated	40,402	65,041	33,933	103,148	60,116
Chemicals	**345,135**	**391,855**	**389,664**	**502,193**	**581,607**
Complex Fluorine Salts	6,170	6,119	5,577	5,377	5,985
Sulphuric Acid; Oleum	977	650	826	510	1,323
Carbonates	7,311	7,396	7,141	8,334	10,211
Phosphoric Acid	37,012	61,709	60,618	64,095	69,755
Dyeing, Tanning & Coloring Materials	9,506	10,683	11,292	14,493	16,471
Medical and Pharmacy Products	129,716	142,791	130,971	158,452	198,604
Polishing &Cleaning Preparations					
& Perfume Materials	33,490	52,264	47,354	48,558	39,619
Plastic & Articles Thereof	32,835	21,176	18,655	27,242	38,411
Fertilizers	61,099	63,952	73,661	123,760	128,678
Manufactured Goods Classified					
by Material	**168,795**	**159,721**	**132,218**	**158,545**	**176,695**
Paper and Cardboard	50,084	37,316	30,634	35,482	44,703

Exported Items	2001	2002	2003	2004(1)	2005(1)
Textile Yarn, Fabrics, Made up Articles					
& Related Products	21,223	17,053	13,657	15,839	16,576
Cement	25,251	28,288	28,809	21,142	12,087
Worked Monumental or Building Stone	3,035	3,124	2,668	4,837	7,436
Machinery and Transport Equipment	**122,826**	**101,175**	**77,083**	**103,018**	**127,087**
Buses	24,206	17,483	6,971	13,719	16,254
Miscellaneous Manufactured Articles	**264,262**	**412,111**	**567,514**	**841,010**	**924,676**
Clothes	203,851	357,697	479,087	708,960	744,308
Footwear	1,965	1,517	1,085	1,037	1,060
Printed Matter	8,821	2,854	3,688	3,547	5,711
Plastic Products	8,240	9,446	9,227	13,506	19,896
Commodities and Transactions					
not Classified Elsewhere	**1**	**35**	**2,189**	**20,677**	**29**

Source: Central Bank of Jordan, Monthly statistical bulletin, 2006.
(1) Preliminary estimates

6.1.2 A Review of Human Capital in Jordan

Human capital is defined as the stock of useful, valuable, and relevant knowledge built up in the process of education and training. It includes also the aggregation of investments such as education, health, on-the-job training and. migration that enhance individual's wellbeing. Table 1 shows the annual distribution of Jordanians employees by the educational level. The table shows that the majority of employed Jordanians have lower than secondary school education.

Table 1. Annual Distributions of Jordanian Employees by Educational Level

Educational Level	2001	2002	2003	2004
Illiterate	3%	3%	2%	3%
Literate Without Formal Education	5%	4%	4%	4%
Below Secondary Education	46%	44%	46%	46%
Vocational Apprenticeship	2%	2%	2%	1%
Secondary Education	14%	15%	14%	14%
Intermediate Diploma	12%	13%	13%	12%
Bachelor's Degree	16%	16%	16%	17%
Graduate Degree	3%	4%	3%	3%
Total	**100%**	**100%**	**100%**	**100%**

Source: National Center for Human Resources Development (NCHRD), Al Manar Project, http://www.almanar.jo/, 2006

1. Literacy and School Dropout Rates

Table 2 shows the literacy rate in Jordan distributed by gender in 2006. The table shows that Jordan is the leading country in the region where adult literacy rate among the youth (15-24 years) amounted to 99.1 which is the highest in the region.

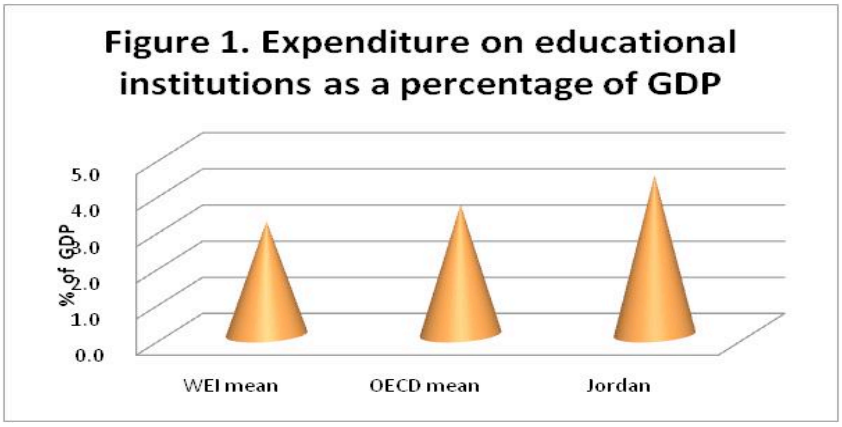
Table 2. Literacy Rates and Illiterate Population by Gender (2006)

Age	Adult Literacy Rate (%)				Adult Illiterate Population			
	Total	Male	Female	GPI	Total	Male	Female	% Female
Adult (15+)	89.9	95.1	84.7	0.89	330,010	86,559	243,450	73.8
Youth (15-24)	99.1	99.3	98.9	1.00	9,592	3,780	5,813	60.6

Source: UNESCO Institute for Statistics (UIS), Literacy and Non Formal Education Section , 2006, http://www.uis.unesco.org

2. National Expenditure on Education

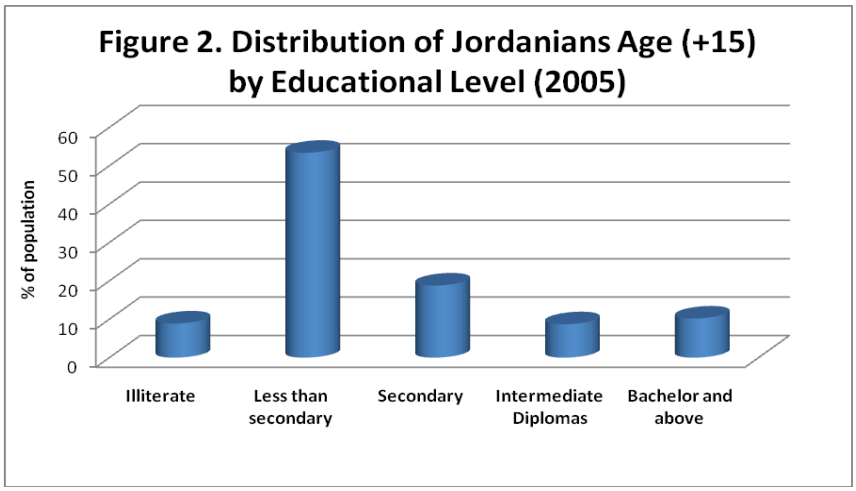
Expenditure on educational institutions as a percentage of GDP is one of the important indicators that is used in the assessment of the quality of human capital. The expenditure indicator includes that direct and indirect expenditure on educational institutions from public and private sources for all levels of education, by source of funds and level of education. The available statistics show that national expenditure on primary, secondary and post-secondary non-tertiary education amounted in 1999 to 4.1% (public schools only). The level of expenditure in 2002 increased to reach to 4.4% which is one of the highest ratios in the world as shown in figure 1. The figure shows that Jordan spending on educational institution as a ratio of GDP is even higher than that of the OECD.



Source: UNESCO Institute for Statistics (UIS), Total public expenditure on education, Updated: 2005, http://www.uis.unesco.org

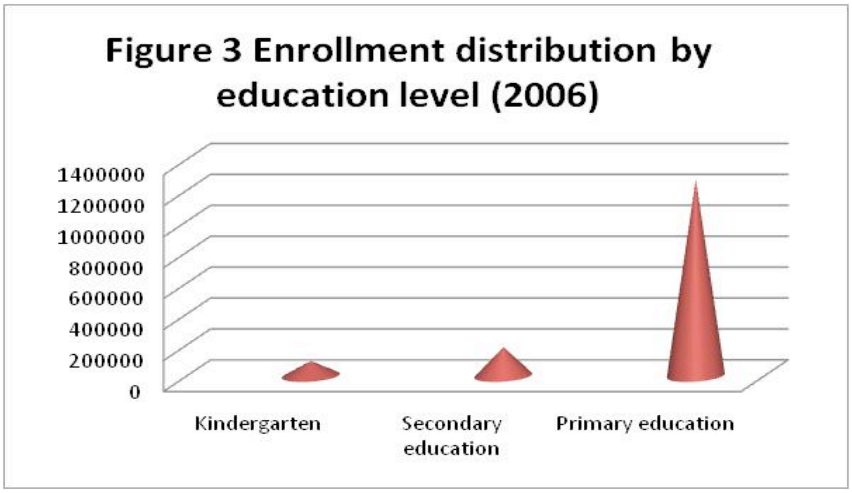
3. Secondary and Tertiary Enrolment and Enrolment in Science and Technology

Post-secondary or tertiary education, or higher education, is a non-compulsory educational level following the completion of a school providing a secondary education, such as a high school, secondary school, or gymnasium. Tertiary education is normally taken to include undergraduate and postgraduate education, as well as vocational education and training. Colleges and universities are the main institutions that provide tertiary education (sometimes known collectively as tertiary institutions). Figure 2 shows the distribution of the Jordanian population by the education level in 2005. The figure shows that about 50 percent of Jordanians have an educational level of less than secondary.



Source: Department of Statistics, population and housing statistics, www.dos.gov.jo

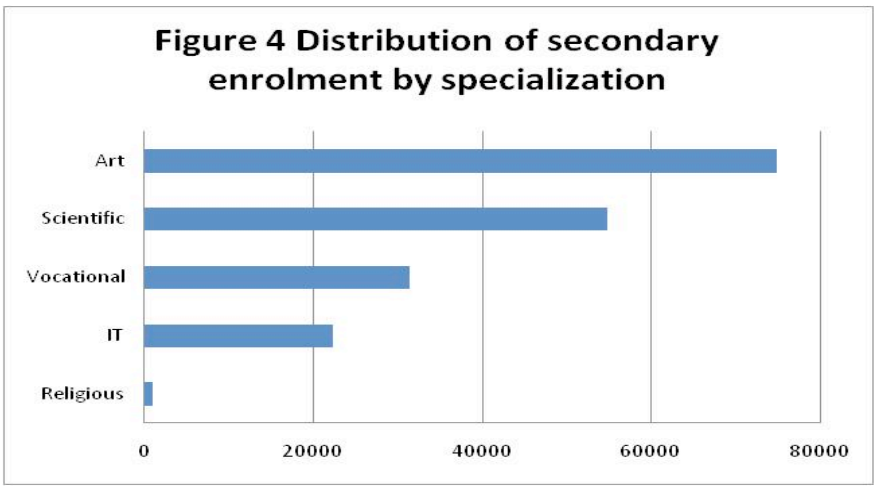
Figure 3 depicts that the enrollment distribution by educational level in 2006. The figure shows that the majority of enrolment is at the primary level, which assures that spending on education will be increasing in the coming years to meet the needs of the young generation for better quality of education.



Source: Ministry of Education, Educational Statistics, 2005/2006, Amman, Jordan

4. Enrollment in Technical and Vocational Education

Vocational and technical education starts after the compulsory education. Students can be enrolled after the completion of the tenth grade. Vocational and technical education at the secondary level is a "two-year" program in which the student has to pass a general examination. Figure 4 shows the distribution of the secondary school enrolment by specialization in 2006. It is clear from the figure that the Arts and Science education is the dominant education followed by vocational training.



Source: Ministry of Education, Educational Statistics, 2005/2006, Amman, Jordan

5. Classroom size

Jordan has invested huge amounts in the education infrastructure during the last three decades. One of the major objectives of the Ministry of Education is to reduce the number of students in the classrooms. As indicated in table 3, the average class size ranged between a minimum of 21 at the kindergarten to a maximum of 31 at the seventh and eighth levels.

Table 3: Average Classroom Size at the Different School Levels (2006)

School Level	Number of Classrooms	Number of Students	Average Number of Students per class
Kindergarten	4450	95389	21
First	5259.8	131706	25
Second	5108.8	132954	26
Third	4943.4	130720	26
Fourth	5140.3	138102	27
Fifth	4741.1	137135	29
Sixth	4548.7	134840	30
Seventh	4141.7	128633	31
Eighth	3906.3	120297	31
Ninth	3732.9	113292	30
Tenth	3405	102689	30
Secondary 1	3955	95715	24
Secondary 2	3700	88616	24

Source: Ministry of Education, Educational Statistics, 2005/2006, Amman, Jordan

Table 4 shows the distribution of the average number of students per teacher and per classroom at schools managed by the different types of supervising authorities in Jordan. The table shows that most congested classrooms are those supervised by the UNRWA and the least congested classrooms are those run by private schools and other government authorities such as the military services.

Table 4: Distribution of the Number of Students per Classroom by the Type of Supervising Authority

Supervising Authority	% of students			Average student per	
	Total	Males	Females	Classroom	Teacher
Grand Total	100%	50.8%	49.2%	27.2	18.5
Ministry of Education	69.8%	33.8%	36.0%	28.4	18.4
Other Gov. Authorities	1.1%	0.9%	0.2%	19.8	12.7
UNRWA	8.0%	4.1%	3.9%	37.0	30.3
Private schools	21.1%	12.0%	9.1%	22.2	16.9

Source: Ministry of Education, Educational Statistics, 2005/2006, Amman, Jordan

Table 5 sheds the light on the vocational education in Jordan in terms of the supervising authority and the number of schools and vocational centers in Jordan. As indicated in the table, the Ministry of Education is the dominant in terms of comprehensive schools while the vocational centers are managed by other authorities such as the Vocational Training Corporation (VTC).

Table 5 Vocational Education in Jordan

Supervising Authority	Comprehensive schools	No. of Centers	No. of Classrooms	No. of Students	No. of Teachers
Grand Total	157	30	1674	31327	3380
Ministry of Education	152	0	1178	24850	2713
Other Gov. Authorities	3	28	432	5575	571
UNRWA	0	1	38	577	64
Private schools	2	1	26	325	32

Source: Ministry of Education, Educational Statistics, 2005/2006, Amman, Jordan

6. Tertiary Education:

Over the last two decades, tertiary education has witnessed a fast horizontal and vertical accumulated growth. The main features of this growth are:

- The growing number of established public and private universities. In 1990 there were only 4 public universities in the country holding 34,984 students while in 2006 there were 24 universities holding a sum of 192,042 students. Of these universities, there are only 10 public and the rest owned by the private sector. There are also sums of 21 community colleges with total enrollment of 29,000.
- Another feature is the increasing number of academic degrees that are offered by each university. Despite few slight variations, the newly introduced academic degrees and university colleges are almost identical to each other.
- Table 6 demonstrates staff qualifications at each of the major public and private universities in Jordan. The table shows that the number of teaching staff at all functioning universities is 6,542, of which 72% hold an academic rank of assistant professor and higher. The University of Jordan is the leading higher education institution in terms of employed teaching staff and the number of high ranking staff.

Table 6. Academic Staff In the Jordanian Universities By Academic Rank for the Year 2005 / 2006

University	Full Prof.	Associate Prof.	Assistant Prof.	instructor	Lecturer	Teach. & Res. Ass.	Total
Grand Total	**1001**	**1172**	**2572**	**810**	**494**	**493**	**6542**
The University of Jordan	331	222	352	54	91	79	**1129**
Yarmouk University	206	176	205	116	0	67	**770**
Mu'tah University	106	149	152	22	96	13	**538**
Jordan Uni. of Science & Technology	97	153	282	3	138	15	**688**
The Hashemite University	38	45	200	24	50	88	**445**
AL al - Bayt University	17	19	138	55	0	0	**229**
AL-Balqa' Applied University	22	29	113	51	14	73	**302**
AL-Hussein Bin Talal University	6	15	67	9	15	6	**118**
Tafila Technical University	3	14	40	20	20	21	**118**
German Jordanian University	3	2	5	0	8	0	**18**
Al - Ahliyya Amman University	23	49	110	58	5	51	**296**
Applied Science Uni. (Private)	27	50	167	35	25	0	**304**
Philadelphia University	22	59	127	81	1	78	**368**
Al - Isra Private University	28	35	115	78	0	0	**256**
University of Petra	18	33	76	59	0	0	**186**
Al-Zaytoonah Private Uni. of Jordan	30	62	117	30	28	0	**267**
Zarqa Private University	8	18	90	33	0	0	**149**
Irbid National University	2	16	78	25	0	0	**121**
Jerash Private University	7	15	97	43	0	0	**162**
Princess Sumaya Uni. for Tech.	7	7	19	8	0	0	**41**
Jordan Academy of Music	0	2	3	4	2	2	**13**
Educational Sciences Faculty	0	2	19	2	1	0	**24**

Source: Ministry of Higher Education, Jordan, 2007

Table 7 shows that the number of female students is slightly higher than male students. The table also shows that 57 percent of the students are enrolled in humanities colleges. While in the Science colleges, engineering is the dominate field of specialization (39 percent) followed by mathematics and computer science (36 percent).

Table 7: The Major Fields of Specification at Various Universities in Jordan in 2006

Field	Total	Female	Male
Veterinary Medicine	219	70	149
Dentistry	1462	823	639
Architecture &Town Planning	1562	936	626
Agriculture	3394	1963	1431
Medicine	3606	1044	2562
Pharmacy	6569	3432	3137
Natural Science	9130	6278	2852
Para - Medical Science	11912	5204	6708
Mathematics & Computer Sc.	21426	8815	12611
Engineering	23224	6134	17090
Humanities colleges	109538	62479	47059
Total	**192042**	**97178**	**94864**

Source: Ministry of Higher Education, Jordan, 2007

Graduate studies have also witnessed huge growth in the last decade. Many of the public and private universities introduced new graduate programs in the different areas. Table 8 shows that the total number of enrolled graduate students amounted to 16,132 students, of which 72 percent are enrolled in the M.A/M.Sc. programs. The University of Jordan is the dominant institution in terms of enrolled graduate students (27 percent) followed by Yarmouk University (22 percent).

Table 8: Graduate Studies Students Enrolled at the Jordanian Universities by Degree for the year 2005 / 2006

University	H.Dip.	M.A/M.Sc.	Ph.D	Total
Grand Total	**2162**	**11652**	**2318**	**16132**
The University of Jordan	237	3106	1073	**4416**
Yarmouk University	806	2322	497	**3625**
Mu'tah University	77	1404	81	**1562**
Jordan Uni. of Science & Technology	133	1306	0	**1439**
The Hashemite University	50	480	0	**530**
AL al - Bayt University	110	878	0	**988**
AL-Balqa' Applied University	147	639	18	**804**
AL-Hussein Bin Talal University	67	0	0	**67**
Tafila Technical University	58	0	0	**58**
Amman Arab Univ. for Graduate Stu.	477	1432	649	**2558**
Al - Ahliyya Amman University	0	16	0	**16**
Philadelphia University	0	29	0	**29**
Al - Isra Private University	0	20	0	**20**
Al-Zaytoonah Private Uni. of Jordan	0	16	0	**16**
Jerash Private University	0	4	0	**4**

Source: Ministry of Higher Education, Jordan, 2007

6.1.3 Research and Development (Innovation)

Little information about the reality of R&D in the Arab world is available. However, statistics show that USA, Japan & Western Europe are the leading nations in terms of spending on R&D followed by Russia and Eastern countries. In third rank come India and South East Asian countries followed by the poor African and Asian nations in the fourth rank. The Arab countries fall between the third and the fourth rank, where the spending on R&D is very little. In this stage, the Arab countries are considered as importers and consumers of R&D products with little efforts towards working on implementation of R&D as priority.

1. Public and Private Expenditure on R&D

The available figures on spending on R&D in Jordan as a percentage of the GNP amount to 0.4%. This ratio is considered very low when compared to the mean international standard in developing and industrial countries 1% and 2.3%, respectively. Universities in Jordan contribute about one-third of the total expenditure on scientific research. The contribution of the private sector does not exceed 4% of total allocated funds for R&D. Table 9 shows the distribution of scientific research budget components in public universities in the years 2000 and 2003. The table shows that there was a tremendous increase in the expenditure in 2003 compared to 2000. The main increase was in the component of scholarships and training.

Table 9 Allocated Funds for Scientific Research Distributed by Public Universities in 2000 and 2003

R&D component	2000		2003	
	Expenditure (JD)	% of total budget	Expenditure (JD)	% of total budget
Projects & conferences	956,319	0.6	2,823,631	1.2
Books & periodicals	1,858,970	1	1,782,714	0.7
Equipments& Lab supplies	2,561,570	1.5	3,295,688	1.4
Scholarships & training	3,415,426	2	7,627,078	3.2
Total	**6,933,315**	**5.1**	**15,529,111**	**6.5**

Source: Nabil Shawagfeh and Sami K. Abdel-Hafez, Enhancing Research and Development, National Forum on Higher Education Reform, King Hussein Bin Talal Convention Centre, Jordan, February 11 – 12, 2007

2. The Impediments to R&D

As in the case of the rest of the Arab World, there are a number of causes for the setback in R&D in Jordan. The most significant of these can be referred to institutional inefficiencies and low private sector participation in R&D. With regards to the institutional inefficiencies, it clear that there is a clear lack of coordination and systematic planning among government departments and agencies dealing with R&D activities. These institutional inefficiencies have resulted in a very weak delivery system, which extends from technology generation to adaptation, use, and commercialization and inefficient allocation of R&D resources. At the university level, where the majority of research projects take place, research activities are primarily for promotional purposes targeting quantity more than quality. In addition, the research output mostly is theoretical in nature; not applicable to national industrial and socioeconomic development needs. Another major limitation of academic research is the absence of innovative research projects and the limited teamwork in research projects.

The limited investment in R&D is obvious by low private sector participation in R&D initiatives. This is also linked to the share of the private sector in the economy. In developed countries this issue was tackled through an effective partnership between the public and the private sector. In countries such Japan, the share of the private sector reaches to 83 percent; Korea, 82 percent; and Singapore, 62 percent.

3. Personnel in R&D; Scientist and Engineers in the Field

The limited capital investment in R&D is also related to the very low number of personnel working in R&D activities. The total number of human resources working in R&D in Jordan amounted to 23,946 in 1998 (the most recent available source). Table 10 shows that full-time researchers amounted to 9,090 who mainly work at main universities.

Table 10 . Human Resources in Research and Development in Jordan in 1998

Staff Type	No. of Researchers
R&D personnel	23,946
Full-Time researchers	9,090
Full-Time technicians	3,345
Full time supporting staff	11,511

Source: UNESCO Institute for Statistics / Institut de statistique de l'UNESCO, www.unctad.org/templates/Download.asp

Another indicator of the setback of R&D activities is the limited funds available for academic research at the main universities in Jordan. Table 11 demonstrates that despite the huge number of Ph.D. holders in both public and private universities, the total amount that was allocated for R&D activities was around 3 million Jordanian Dinars. In other words, the share of each Ph.D. holder working at main universities in R&D was less than 850 Jordanian Dinars (US$ 1200) in 2003.

Table 11: PhDs, Research Projects and Research Expenditure of Jordanian Universities (2003)

University Type	No. Ph.D. holders	Univ. Sponsored Research Projects		Research Projects Supported from external sources	
		Number	Budget (JD)	Number	Budget (JD)
Public (6 Universities)	2,562	338	1,329,000	46	1,464,000
Private (6 Universities)	852	21	71,000	2	30,000
All	3,414	359	1,400,000	48	1,494,000

Source: Nabil Shawagfeh and Sami K. Abdel-Hafez, Enhancing Research and Development, National Forum on Higher Education Reform, King Hussein Bin Talal Convention Centre, Jordan, February 11 – 12, 2007

6.1.4 ICT Infrastructure and Infostructure

The nature of the telecom market in Jordan is not different from the rest of the markets in the region. Based on the fixed and mobile penetration rates, the telecom market in Jordan has developed in parallel with other markets in the region. In the last few years, the government has

taken serious steps toward encouraging the private sector to play a pivotal role in the telecom market. The government policy encourages the widest possible access to communications services at affordable prices. The telecom market in Jordan is considered as one of the most liberal and competitive market in the region.

A recent study by Global Research Telecommunications concluded that the penetration rates in both fixed line and mobile services are still relatively low compared to the GCC countries. The number of fixed line subscribers was 670,000 lines at the end of 2005, with a penetration rate of 12.2% compared to 3.13 million mobile subscribers at the end of 2005 representing a penetration rate of over 57%. As indicated earlier, the penetration rate for internet services is 2%. However, it is expected that there will be a huge growth for data communication services in the coming years as the demand for internet related services has been strong.

Jordan Telecom (JT) which is owned by the Government of Jordan and a consortium led by France Telecom (FT) was the only fixed line service provider in Jordan until December 2004. As part of the market liberalization of the telecom sector, the second license was awarded in May 2005, to Batelco of Jordan to provide fixed line telephony services in Jordan.

The mobile services are currently provided through four mobile operators:

- Fastlink, the first operator which first introduced the mobile service in 1995 and benefited from a 5-year monopoly period from the government;
- Mobilecom, a wholly owned subsidiary of JT, launched its operations in September 2000 and was granted a 3 year exclusive duopoly with Fastlink;
- Xpress Telecom, which is the only licensed operator that operate an IDEN (Motorola proprietary based) radio-trunking network, launched its operations in May 2004.
- Umniah was the latest GSM mobile operator, a subsidiary of Batelco of Bahrain. Umniah launched its services in June 2005. The latest figures shows that the number of subscribers in Umniah amounted to 1.2 million in May 2007
- Compared to fixed line penetration, mobile services in Jordan has exceeded the fixed line penetration by a ratio of about 5:1, and currently covers more than 57% of Jordan's population. Compared to the rest of the region, Jordan is ranked fifth in terms of penetration rates, which indicates that the mobile market in Jordan is highly developed with a mobile penetration rate of 57% in 2005 compared to the region's average penetration rate of 42.9%.
- Jordanian consumers have already started to feel the impact of the liberalization of the telecom market in the country. Five telecom companies have already been licensed and nine others waiting in line. Many of these companies, including Jordan Telecom, which uses Voice over Internet Protocol based service (VoIP) in the form of international calling card, enabling cheaper calling to many countries. To meet the growing competition in the local markets, JT has also launched its Livebox service, an internet technology based telephony service that provides subscribers with an additional telephone number and ADSL internet access, 'free' unlimited calling between Livebox subscribers, a single tariff for local and national calls, discounted mobile calling, per-second charging of international calls as well as online account administration and payment.
- High speed internet services are currently provided by many ISPs in Jordan. Broadband internet is at the center of the competition among the ISPs. Jordan's ADSL connections currently come in 4 types: 128, 512, 1024, and 2048 kbps. The current prices of the ADSL services are still higher than those in Europe or Israel. Future reduction in ADSL prices should make this service within the reach of many Jordanian customers and would encourage the majority to migrate towards faster and faster connections.

The Telecommunication Regulatory Commission (TRC) was established under the Telecommunication Law of 1995 (amended in 2002), to regulate the Jordanian telecom market, issue telecom licenses, foster a healthy competitive environment and prevent anti-competitive behavior. It enjoys legal status and possesses financial and administrative independence. Jordan joined the World Trade Organization (WTO) in December 1999 which obligated it to liberalize its telecommunications Company (JT) offers fixed line service (670 thousand lines), mobile (through Mobilcom mobile service) and data communication services (Wanado ISP) which gives it a unique competitive advantage in providing a convergent platform for a wide array of services. The company had 250 million shares outstanding at the end of June 2006. The shares are listed on the Amman Stock Exchange. Shares of Jordan Telecom (JT) started trading on the Amman Stock Exchange (ASE) on November 4th, 2002 at an Initial Public Offering price of JD2.35. In October 2006, the stock was offered at JD 4.46 with a total market value of around 1,115 million JOD.

In mid 2006, Bahrain Telecommunications Company bought a 96% stake in Jordan's mobile operator, Umniah Mobile Communications, for US$415 million. The main investors of the group include Aggad Investment Company of Saudi Arabia (18.7% stake), National Advanced Systems Co of Saudi Arabia (18.7% stake), and the Jordan Fund (13.48%).

Xpress Telecom Company uses push-to-talk communications through one-to-one or one-to-many calls that permit group communications of up to 100 subscribers with a push of a button. The market value of this operator was estimated at US$85.4 million project.

The first mobile operator in Jordan was established in 1995 under the name "Jordan Mobile Telephone Services Company Ltd. (Fastlink). At the beginning of 2003, Mobile Telecommunications Company K.S.C of Kuwait bought 91.6% of Fastlink for US$423 million taking MTC's ownership to 96.5%. Currently, the number of Fastlink subscribers is around 2.17 million subscribers.

With regards to other indicators related to available infrastructure in the ICT sector, a recent survey in Jordan concluded:

- The percentage of who use computers rose from 29.5% in 2003 to 35 percent in 2004;
- The percentage of internet users rose from 15.6% in 2002 to 17.5% in 2004;
- IT gross revenues reached US$440 million in 2004, up from US$170 million in 2001;
- In 2004, 4,500 students graduated from Jordanian ICT programs;
- Jordan is a leader among Arab countries in educational spending as a percentage of GDP and in computer to student ratios. Jordan's eight public universities, 12 private universities, and 21 community colleges, which attract students from around the Arab world, house more than 120,000 students.
- The IT student population numbered 8,000 at the university level and 5,300 at the college level.
- Jordan has a higher proportion of university graduates in technological fields than any other country in the region. Jordan ranked 14th out of 110 countries for the number of engineers and scientists according to the Global Competitiveness.

6.1.5 Economic and Institutional Regime:

1. The Banking System

The Central Bank of Jordan (CBJ) is entirely government-owned, which operates as an independent and autonomous legal entity. CBJ began operating in October 1964 in accordance

with the Law of the CBJ enacted in 1959, and currently operates in accordance with the 1971 Law of the CBJ and its amendments. The CBJ implements monetary policy in line with the government's overall economic policy. It also issues and regulates the currency, manages the international reserves, regulates credit, acts as banker and fiscal agent to the government and supervises the banking sector.

A major role of the CBJ is to supervise and regulate the banking sector in Jordan, to which it acts as lender of last resort. Arab Bank is the dominant banking institution, whereas Jordan-Kuwait Bank has witnessed the strongest growth both in retail and investment banking in recent years. While there are no restrictions on foreign banks, only eight foreign banks have set up branches in the country. According to the latest publication by the CBJ, there are 13 commercial, 2 Islamic and 8 foreign banks operating in Jordan. The following is a list of banks operating in Jordan:

A. Commercial Banks .

Arab Bank PLC.
Arab Banking Corporation (Jordan)
Arab Jordan Investment Bank
Bank of Jordan PLC
Cairo Amman Bank
Capital Bank of Jordan
Jordan Commercial Bank
Jordan Investment and Finance Bank
Jordan Kuwait Bank
Jordan National Bank PLC
Societe Generale de Banque / Jordanie
The Housing Bank for Trade & Finance
Union Bank for Saving & Investment

B. Islamic Banks

Islamic International Arab Bank PLC
Jordan Islamic Bank for Finance and Investment

C. Foreign Branches

Standard Chartered
Egyptian Arab Land Bank
HSBC Bank Middle East
Citibank
Rafidain Bank
National Bank of Kuwait
Banque Audi / sardar Audi Group
Blom Bank

The above list of banks assures the diversity and the openness of the banking system in Jordan to the rest of the world. The banking system in Jordan, has witnessed a significant improvement in all areas including e-banking. The majority of the commercial banks in Jordan offer e-banking services for individuals and commercial firms. Many banks are up-to-date with the latest banking technology which they believe is directly correlated with boosting efficiency and accuracy of banking operations. A diversity of e-banking services is provided in terms of services, products, and distribution E-channels. The electronic banking services provided by many of these banks include online services tailored also for the retail sector. For instance, the Iskan Online platform offered by the Housing Bank incorporates 32 advanced and diverse banking services.

2. The Stock Market

The Amman Stock Exchange (ASE) was established in March 1999 as a non-profit, private institution with administrative and financial autonomy. It is authorized to function as an exchange for the trading of securities. The exchange is governed by a seven-member board of directors. A chief executive officer oversees day-to-day responsibilities and reports to the board. ASE membership is comprised of Jordan's 64 brokerage firms.

It is believed that the ASE is well-developed in terms of financial infrastructure and regulatory oversight despite the fact that market activity is low. A World Bank report concluded that with appropriate reforms, Jordan could achieve to double its goal of promoting financial sector development, while increasing the rate of return that the system can afford to pay its members.
At the primary market, the listed securities as of May 2007 include:

- 15 banking institutions (includes major operating banking in Jordan such Arab bank, Housing bank, Islamic bank,…etc.)
- 12 insurance companies (includes major insurance companies in Jordan such as Al-Nisr, Jordan Insurance …etc.)
- 41 companies in the service sector;
- 40 companies in the industrial sector

At the secondary market, the listed securities as of May 2007 include:
- One bank;
- 14 insurance companies;
- 57 companies in the service sector; and
- 48 companies in the industrial sector

ASE also deals with bonds which include mainly the following:
- Treasury Bills issued by the Government;
- Public Entities Bonds Guaranteed by the Government (Water Authority and Agricultural lending); and
- Corporate Bonds such as Jordan Telecom, Arab International Hotels,…ect.

Table 14 shows the latest indicators of the stock market in Jordan. Key statistics of ASE shows that the number of listed companies increased from 161 in the 2001 to reach 227 in 2006. Also during the same period market capitalization increased from 4,476.7 in 2001 to 21,078.2 million JD in 2006.

Table 14: Major Indicators of Amman Stock Exchange (2006-2007)

The Indicator	2006		2007			
	Nov	Dec	Jan	Feb	Mar	Apr
Trading Volume (JD million)	853.8	665.3	833	1536.9	1155.8	758
Weighted Price Index (point)	5607.7	5518.1	6145.7	6543.7	6148.7	5970.9
Free Float Price Index (point)	3044.4	3013.7	3256.2	3408.5	3274	3155.8
Arab Purchases Value (JD million)	85.1	108.9	110.8	328.4	230.9	125.5
Non-Arab Purchases Value (JD million)	11.2	16.6	24	34.8	24.2	34.1
Non-Jordanians Net Investment (JD million)	-2	28.6	17.5	-12.9	77.8	69.5
Non-Jordanian Ownership Percentage	45.1	45.5	45.9	45.8	45.9	46.4

The Indicator	2006		2007			
	Nov	Dec	Jan	Feb	Mar	Apr
%						
Price/ Earnings Ratio (times)	17	16.7	20.3	21.3	19.8	22.2
Price/ Book Value Ratio (times)	3	2.9	3.3	3.4	2.6	2.3
Dividend Yield Ratio (%)	2.3	2.3	1.9	1.9	2.1	1.8
Turnover Ratio (%)	6.7	5	5.8	9	7.5	5.9
No. of Listed Companies	226	227	228	229	229	230
Value of Development Bonds Traded (JD thousand)	-	-	-	-	-	-
Value of Corporate Bonds Traded (JD thousand)	-	0.005	1.8	250	-	-
Value of Treasury Bonds Traded (JD thousand)	-	-	-	-	-	-
Market Capitalization (JD million)	21479.2	21078.2	23396.4	24865.8	23498.2	22944.6
Market Capitalization / GDP (%)	238.3	233.9	259.6	275.9	232.5	227

Source: ASE website: http://www.ase.com.jo/pages.php

Key issues and regulations related to the stock market:

- The JOD has, in practice, been pegged to the USD since 1995. There is a spread of 0.3% between the CBJ's buying and selling rates.
- It is permitted for licensed banks to buy and sell an unlimited amount of foreign currency against the JOD on forward contract basis in order for payment of imports into Jordan.
- Exchange controls non-existent in Jordan.
- Non-resident investors are not permitted to hold more than a 49% stake or 50% subscription in shares in the commerce, trade, construction and transport sectors.
- The minimum amount of money invested in one project must not be lower than JOD 50,000.
- Foreign investment is not permitted in investigation and security, mining and quarrying, sports clubs and road transportation of goods and passengers.
- Lending in foreign currency must not exceed 30% of a bank's foreign currency deposits.

3. The Legal System

The Hashemite Kingdom of Jordan was established as an independent state in 1947, with Islam as the state religion. The first Constitution was approved in 1948, which was followed by a process of developing a national legal system to replace the relics of Ottoman rule. A new Constitution was put in action in 1952, retaining the religious and communal basis of jurisdiction in personal status matters. A Civil Code and Civil Procedure Code were ratified in 1952 and 1953, the former replacing the Ottoman Majalla of 1876.

The Jordanian legal system is copied from the Ottoman heritage in the communal jurisdiction of the religious courts of different communities over matters of personal status. However, the civil court system follows the French model. The shari`a courts are established in the Constitution along with the religious tribunals of other recognized communities and include first instance courts with a single qadi and the Shari`a Court of Appeal. The other two categories of courts established in the constitution are the civil or regular courts (nizamiyya) and 'special tribunals'.

- The different laws that rules the legal system in Jordan are”
- Courts Establishment Law 1951;
- Law on Shari'a Lawyers 1952;

- Law on Structure of Shari'a Courts 1972;
- Law of Personal Status 1976;
- Civil Code 1976

The sources of the above laws are the legislation, constitutional law, Islamic law and customs. However, generally speaking, the Jordanian legal and legislation system is influenced by the Ottoman laws, British rule, European legal systems as well as by Egyptian and Syrian developments and reforms, particularly in personal status matters.

a. Business and Economy related Laws

During the last decade, the government took several serious decisions to improve the competitiveness of the Jordanian products and to improve the investment atmosphere in general. A recent survey conducted by the World Economic Forum on102 countries concluded that the major strengths of the Jordanian economy consists of: the quality of the educational system (ranked 27); the availability of scientists and engineers (ranked 12, outranking Singapore); infrastructure quality (ranked 23, outranking Israel); judicial independence (ranked 23); efficiency of legal framework (ranked 29); protection of minority shareholder interest (ranked 19); and intellectual property protection (ranked 22).

The Ministry of Industry and Trade is responsible for regulating the internal and external trade, monitoring it, and preparing the studies and the agreements that protect the interest of the country and its citizen. Several laws and regulations related to business and economic aspects in the country are implemented and monitored by the Ministry of Industry and Trade which include:

Laws

1. Industry and Trade Law No.18 for the year 1998
2. The Companies Law No. 22 of 1997 and its amendments
3. National Production protection Law No. 21 of 2004
4. Commercial Agents and Mediators Law
5. Trade Marks Law
6. Protection of Integrated Circuits Designs for the year 2000
7. Patent Law No. 21 of 1999 and its amendments
8. Competition Law NO. 33 of 2004
9. The geographical indication Law
10. The Industrial Designs and Models Law for The Year 2000
11. Jordan's Membership to the World Trade Organization (WTO)
12. The Law of the Free Zones Corporation No. (32) for 1984
13. The Jordan Industrial Estates Corporation Law

Regulations

- Anti-Dumping & Anti-Subsides regulation No 26 of the year 2003
- Industrial Designs and Models regulation No 52 of the year 2002
- Patent Regulation
- Regulation on Safeguard of National Production No 55 of the year 2000
- Companies Regulation and its amendments No 50 for 1997
- Administrative Organization of the Companies Supervision department
- Regulation No 44 for 2003.
- Scientific Research and Vocational Training Fund Regulation No 66 for 1998
- Fees for the Supervision of the General Assembly meeting Regulation No. 51 for 1997.

- ✧ Instructions for implementing the procedures to enforce a Judicial Decision to sell shares of Partners in a limited liability Company for 1997
- ✧ Investment Regulation
- ✧ The Free Zones Corporation Investment Regulation

b. ICT related Laws

A major feature of the development of the ICT sector in Jordan is the telecommunications deregulation which started in 2000. The policy has created a competitive ICT environment that offered highly advanced services to consumers with increasingly competitive rates. The use of telecommunications services has continued to increase with expanded availability. Today, 93 percent of Jordanians have access to telecommunication tools through fixed or mobile lines.

The advancement in the ICT sector has continued boosted by ICT related laws such as the national Intellectual property rights, privacy status and status of freedom of expression. In 2004, Jordan joined the World Intellectual Property Organization (WIPO). Accession to the WIPO Copyright Treaty entered in force on April 27, 2004. Through accession into the WIPO, Jordan aims to:

- ✧ Harmonize national intellectual property legislation and procedures;
- ✧ Provide services for international applications for industrial property rights;
- ✧ Provide legal and technical assistance;
- ✧ Facilitate the resolution of private intellectual property disputes; and
- ✧ Regulate storing, accessing, and using valuable intellectual property information in information technology.

The proper enabling environment started with the establishment of the Ministry of ICT in 1995. Its responsibility is to set policies relating to telecom services, with the Telecom Regulatory Commission (TRC) is to implement these policies. The Ministry played a crucial role in regulating Internet services in the country. Currently, the number of licensed ISPs is 25, out of which 10 are operational. Moreover, IP telephony is being regulated in Jordan by TRC.

Other ICT-related laws and regulations that has been implemented and shows the commitment of the government to the promotion of the ICT sector and the socio-economic development of the country include:

1. Deployment of I.T in Government Entities- the National Information Technology Centre Law-Law No. (81) for the year 2003;
2. Trade Names Law No. (22) for the year 2003;
3. Electronic Transaction Law No. (85) for the year 2001, covering e-transactions, e-records, e-signature, and e-documents;
4. Copyright Law No. (22) for the year 1992, amended by law No. (29) for the year 1999;
5. Trade Marks Law No. (13) for the year 1952;
6. Patents Law No. (32) for the year 1999.

7. Conclusions

This section of the report is based on the analysis included in the previous sections. The revealed conclusions are reported here in the same sequence of the study sections.

7.1 An Educated Labor Force and the Education System:

Data on human capital shows that, despite the government's effort to improve the educational level of the labor force in Jordan, the majority of employed Jordanians are below the secondary level. On the other hand, statistics show that Jordan is the leading country in the region where the adult literacy rate among the youth (15-24 years) reached to 99.1%, which is the highest in the region.

The level of national expenditure on primary, secondary and post-secondary non-tertiary education has been increasing over the last decade. In 2002, the level of expenditure amounted to 4.4% of GDP, which is considered as one of the highest ratios in the world. This ratio is higher than the level of spending of OECD countries on education.
The majority of school enrolment is at the primary school, which implies that spending on education is expected to increase in the coming years to meet the demand for better quality of education;

At the secondary school level, enrolment in the Art and Science education is the dominant education, followed by vocational training.

The average classroom size ranged between a minimum of 21 at kindergarten to a maximum of 31 at the seventh and eighth grades. Although there are no studies in Jordan or the region that identifies the optimal classroom size, the experience of other countries shows that expenditures aimed at class size reduction appear to generate tangible gains in academic student achievement especially at primary school. The above analysis showed that most congested classrooms are those supervised by the UNRWA while the least congested classrooms are those run by private schools and other government authorities such as the military services.

The majority of the college enrollment is in humanities specialization. In the science colleges, engineering is the dominate field of specialization (39 percent), followed by mathematics and computer sciences (36 percent). This may raise the issue about if the output of the higher education system matches the demand of the labor market in Jordan. Unfortunately, no studies have been conducted to assess the demand of the labor market at the local or at the regional levels especially since Jordan is one of the major suppliers of highly skilled labor especially to the Gulf region.

The same kind of assessment is also needed for the market demand of higher graduates. Graduate studies have witnessed a huge growth in the last decade. Several graduate programs were introduced by public and private universities in many fields of specialization. The total number of enrolled graduate students amounted to 16,132 students, of which 72 percent are enrolled in the M.A/M.Sc. programs. This huge increase in the number of enrolled students in higher education raises the issue of matching the supply and demand for such programs.

7.2 Research and Development (Innovation):

- Due to the very low spending on research and development, the Arab region is considered an importer and a consumer of R&D products with little efforts being made towards making of R&D a national priority. As a result, the Arab region was ranked between the third and the fourth rank, where spending on R&D is very little.
- A major obstacle facing research institutions especially at the university level is the week and inefficient delivery system extending from technology generation to adaptation, use, and commercialization and inefficient allocation of R&D resources. The majority of research projects at the university level take place primarily for promotional purposes, focusing more on quantity than quality.
- Research output is mostly theoretical; not applicable to national industrial and socioeconomic development needs.
- Unlike developed countries, the participation of the private sector in R&D and in research initiatives is very limited.
- Another limiting factor facing R&D in Jordan is the low number of researchers working in this field and the limited amount of investment devoted to this important sector.

7.3 ICT Infostructure and Infrastructure:

- Despite the fact that the internet service is expanding in Jordan but the percentage of penetration is still low compared to Europe and Israel.
- The telecommunication market in Jordan is the most liberal in the region. The penetration rate of the fixed telephone line is still relatively low compared to GCC market.
- The penetration rate in the mobile phone industry is ranked the fifth which indicates the highly developed mobile market.
- Other indicators on investments in the Infostructure and infrastructure of the telecommunication industry indicate that a huge amount of foreign direct investments (FDI) has been channeled to this sector (France Telecom, Bahrain Telecommunication Company, and the K.C.S of Kuwait).

7.4 Economic and Institutional Regime:

- The banking system has played an important role in the economic development of Jordan especially at the private sector level. Banking statistics assures the diversity and the openness of the banking system in Jordan on the rest of the world.
- The banking sector, has witnessed a significant improvement in all areas including the e-banking. The majority of the commercial banks in Jordan offer e-banking services for both individuals and commercial firms.
- Amman Stock Exchange is considered as a well developed market in terms of financial infrastructure and regulatory oversight despite the fact that the market activity is low. However, it is believed that with additional appropriate reforms, Jordan could achieve the double its goals of promoting financial sector development, while increasing the rate of return that the system can afford to pay its members.
- Jordan has taken some serious steps towards the liberalization of ICT sector. These legislative steps have resulted in producing one of the most competitive ICT sector in the region. However, it is believed that more efforts are still needed to increase the internet penetration rate in the country.

8. Recommendations

The following recommendations are based on the above review and analysis. The recommendations are oriented towards building capacities in Jordan's knowledge-based economy through the utilization of the experience of other countries and lessons learned. The above analysis showed that Jordan has an open market policy compared to the rest of the region. Markets for Jordanian products and services are also growing in the region. However, in the area of high technology, Jordan is still lagging off and faces challenges from many other countries including those of low wage competition from Eastern Asian countries. Facing these challenges and attaining the potential opportunities requires Innovation. This innovation should cover the areas of policy, institutions, infrastructure, products and processes. In more specific terms, the following recommendations would accelerate the building capacities in Jordan's KBE:

- Creating an action-oriented partnership between the different bodies in the countries. This includes public institutions and agencies, the educational institutions, business and trade leaders and syndicates. The development of an innovative, competitive, internationally responsive sector can be seen as a mean through which Jordan can achieve a sustainable prosperity and improve the quality of life of Jordanians;
- Jordan's innovation can be also strengthened through developing linkages between the different important components related to human resource base, information Infrastructure, and higher education and Research Institutes. This can only be achieved through enabling government policies and programs;
- Since the education system is the cornerstone in the innovation process, there is an immense need to create a demand driven system that focuses on individual needs. In addition, there should be more effective coordination and integration among the research system components. This implies making the public sector R&D competitive & responsive and linking university research with market demand at the national and regional level, which can be achieved through providing universities with business oriented grants, focusing on non-traditional sectors, and providing grants for small business research projects;
- Establishing innovative institutions and products require new incentives to encourage innovation and entrepreneurship. This can be achieved through effective business regulations, licensing laws, wage flexibility and efficient labor markets.
- Since joining the World Intellectual Property Organization (WIPO) and its accession to the WIPO Copyright Treaty entered in force on April 27, 2004, Jordan has taken serious steps to face piracy acts and other violations of this treaty. However, it is believed that more action is still needed to strengthen intellectual property protection in the different areas;
- Experiences of other countries in the area of KBE such as India and Ireland show that the highest value added in production is generated from knowledge gained by well-educated and trained individual. In other words, the appropriate allocation of investment is in the knowledge-base of people (human capital). This assures that information is a basic input into competitiveness
- To achieve the highest value added generated from well-educated individuals implies mobilizing additional financial support to high-tech and future-oriented sectors such as IT and other knowledge-based fields. In general, despite the success that was achieved during the last decade in the IT center in Jordan, it is believed that this achievement did not meet the expectations. This implies that the government should continue concentrating on improving the quality of human capital through implementing a national human resources development project to take care of high quality human resources required for the knowledge-based society of the coming decades;

- Jordan should benefit from the experiences of other nations, which can be achieved through cooperating with the innovation systems of other countries such as the EU and the US systems. These systems are open and do not suffer from capacity constraints. The openness on these systems can be attained through cooperating with U.S. and EU researchers and research institutions, and providing funding and fellowships. The two systems are responsive and are considered as "user driven" systems. Consequently research institutions & industry should be engaged in decisions and contribute to the research costs in the joint efforts of education and innovation.

Summation

It is clear that Jordan is ahead of Palestine with regards to the readiness to become a knowledge based economy. In fact Jordan is ahead of Palestine in three out of the four knowledge economy pillars. As regards to human capital developments the two countries in question appear to be on par although Jordan has better and more diversified post-graduate studies programs. As regards to research and development, despite the fact that both countries are at a disadvantage, Jordan is better positioned in terms of the legal framework that is necessary to support and foster a national system of innovations. To this end, Jordan has enacted intellectual property laws and is a member of WIPO as well. In addition, Jordan spends more on research than Palestine and Jordanian universities also spend more on research in comparison to Palestinian universities.

As regards to ICT infrastructure and legal and institutional regime, Jordan is way ahead of Palestine. The telecommunication market is Jordan is the most liberal and competitive in the region. Jordan already has four main mobile service providers (Fastlink, Mobilcom, Xpress and Umniah) and two fixed line companies (Jordan Telecom and Batelco of Jordan). Palestine, on the other hand, has a single fixed telephony company (Paltel) and one cellular service provider (Jawwal) although a second mobile service provider (Wataniya) has been approved to operate in the Territories. With regards to telecommunication regulation, Jordan has regulated its telecom market through the Telecommunications Regulatory Commission, while Palestine's telecom market is unregulated. In fact, telecom basic statistics shows that Jordan is leading the way; Jordan has 3.13 million cellular subscribers compared to 820,000 in Palestine. The number of landline subscribers in Jordan reached 670, 000 at the end of 2005 compared to 341,000 in 2006 in Palestine. Internet cost in both Palestine and Jordan is still considered relatively high in comparison to Israel.

The economic and institutional regime in Jordan is well-established as evidenced by its strong banking system, supervised and monitored by the Jordan Central Bank, and modern stock exchange (ASE) in addition to a bundle of business and ICT related laws. On the other hand, Palestine is a relatively young political entity that was forced to play catch up in all economic and institutional aspects. Despite this, the PNA has achieved important strides with regards to the economic and institutional regime. This includes enacting numerous laws that are deemed important for the functioning of a modern economy, establishing the Palestine Monetary Authority to act as a central bank. The Palestine Securities Exchange (PSE) was also an important addition to the Palestinian economic scene. Moreover, the Palestinian Legislative Council has approved over 85 laws to organize and set in order Palestinian everyday affairs. However some key laws related to ICT and Intellectual property rights need to be considered by Palestinian lawmakers.

All in all, Palestine can learn a lot from the Jordanian experience especially with regards to liberating the telecom market, regulating it and increasing competition in the market. In addition, Palestine can learn from the Jordanian legislation especially in the area of ICT and commerce. Hence, we call on both countries to increase cooperation across a variety of fields related to knowledge economy. This includes collaboration in research especially that both countries are in need to boost their research activities. Palestine and Jordan could also collaborate and learn from their experiences in education. Palestine can learn a lot from the Jordanian IT education and how Jordan became one of the leading IT service exporters in the region. Finally, being a young nation and aspiring for statehood, Palestine could model the legal and institution framework in Jordan. Jordan is a good example of countries which have laid down the foundations for a knowledge-

based economy. Of particular note are the proper legal foundations set in place in Jordan (electronic trade laws, electronic signatures, intellectual property rights, etc), and the national ICT strategy to guide its path towards the knowledge economy.

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