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Abstract

The QIZ Unit of the IDD is responsible for processing QPR certificates and issuing certificates of origin (CO). This report describes the costly and inefficient current certification systems. It then recommends possible business options for automating both the QPR and the CO processes.

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Executive Summary

Product Request (QPR) Process: The Qualifying Industrial Zone (QIZ) Unit of the Industrial Development Directorate (IDD) is responsible for processing QPR certificates and issuing certificates of origin (CO). Jordanian companies exporting to the US under the QIZ duty and quota free regime must first meet local requirements and then file COs at the MIT, the Amman Chamber of Industry, and process the export shipment at the Customs Department. The QPR process steps are as follows:

> **Step 1:** Verify the link between the buyer and manufacturer in Jordan
> **Step 2:** Calculate the Israeli input percentage of the unit FOB price
> **Step 3:** Verify other input material use and percentage of the unit FOB price
> **Step 4:** Calculate the Jordanian input percentage to the unit FOB price

> *Total cost of production = Israel contribution + direct labor cost + indirect labor cost + direct processing cost + indirect processing cost + other inputs*

What takes time is the actual review by officers of all invoices and receipts submitted with each QPR in support of direct and indirect costs incurred in the production process.

Certificate of Origin Process: The QIZ factories first obtain a Temporary Admission (TA) Transactions CO from the Chamber of Industry stating that imported inputs were used to manufacture the product to be exported. This CO is used by the manufacturer to reclaim or reduce the amount of its bank guarantee with Customs held against the temporary imports of duty-free inputs. The Chamber CO costs JD15.

While the goods are being shipped to the US the manufacturer applies for a permanent IDD CO. Although, there appears to be no legal requirement under the QIZ agreement to issue COs, the CO is used to support the LC and bank guarantee transactions with the buyer in the US. The twin CO issuance process is maintained to protect COs from any discrepancies and maintain Jordan's credibility in case of an audit by US Customs. The QIZ division usually verifies the CO contents by requesting a faxed copy of the CO from the Chamber of Industry. IDD requests a monthly CO report from the Chambers in order to cross check quantities and values of QIZ shipments.

Developing a database of the statistics: QIZ staff have developed a Microsoft Excel spreadsheet as a temporary measure that captures some of the data from new COs. Staff have also developed a log in Microsoft Excel which holds information about new COs. However, both are temporary measures until a more permanent database is developed.

In order to produce reports for statistical information, historical QPR and CO data should be digitized. Existing digitized data should be cleaned. This database, if well designed, may be the same one used by the web-enabled system receiving and keeping the newly generated QPR and CO information.

Our benchmark indicators reveal that 60 - 65 QPRs are issued, on average, each month. The average number of COs that are issued per month is 800 - 900, and there is a backlog of 30,000 COs that need to be digitized.

Automating the CO process: It is recommended that the IDD and Chamber cooperate to streamline the issuance of COs by perhaps having the necessary information entered from

one point and producing the two COs in separate reports. The feasibility of producing one CO could also be explored based on the legal, financial, and time requirements to do so.

The Amman Chamber of Industry (ACI) has developed a web-based application system for its members. This system allows the ACI members to log in and fill their information in order to obtain a Certificate of Origin (CO). It is recommended the IDD rely on the system already developed at the ACI. ACI clearly stated that they are willing to cooperate with IDD on this issue.

An issue to be confronted relates to digital signatures not yet being acceptable because of the lack of a secure government network, and a standard system of verification. Several options are suggested, one is the iKey-based intranet authentication technology that allows the web server to authenticate the iKey user and verify his/her identity before allowing entry or use of certain functions.

Another envisioned step for QPR processing is for the manufacturer/exporter to be provided with a password and identified by his enterprise number. Both are used to enter the website. The manufacturer/exporter fills in the QPR web-based form, scans and attaches all the supporting documents, and submits the QPR. The QPR is added to the in-process database.

Automating the QPR Procedure: the QPR was automated by a JUSBP-funded prototype system developed in 2001 by a local company, SigmaSoft costing around JD 6,000. The purpose of developing the prototype was to illustrate the concept of an E-Government service in high demand from QIZ factories. However, the system ceased to function after three months when the SQL/Server license expired. The prototype did not process CO applications, cross-check applications with stored data nor did it produce statistical reports.

Three automation options have been identified:
- ? **Option 1:** Develop a new web-enabled system for both QPR and CO applications and a backend statistical database. The new system's minimum cost will range from JD 9,000 – JD 10,000.

- ? **Option 2:** Use the Prototype as a base for developing an enhanced system by purchasing the source code from SigmaSoft. Due to the additional work required to understand and amend the original source code, the source code should be obtained for less than JD 1,500.

- ? **Option 3:** Reinstall the Prototype "as is" for immediate use. SigmaSoft may demand an annual maintenance contract. Estimated cost is unlikely to exceed JD 6,000.

Given its ability to tailor system development to current IDD requirements and to include MIT IT staff in the development, implementation and maintenance, Option 1 appears the most cost effective. Possession of the prototype source code will not significantly assist the design and development of a new application – it would save resources designing the user interface. Option 3 is the least costly and allows for immediate start-up of the computerization process. However, the prototype system mainly caters for the front-end system and, thus, should be treated as 'a prototype'. A testing step should precede any level of adoption of this prototype.

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1. Introduction

1.1 Objective

This document determines and costs the business requirement options for the design and installation of a web-enabled database application to process qualifying product requests (QPR) and the certificates of origin (CO) that are processed by the QIZ Unit at the Industrial Development Department of the Ministry of Industry and Trade.

The overall project has two objectives: (i) streamline the administrative procedures required at the QIZ Unit of the IDD in order to lower transaction costs for Jordanian exporters under the QIZ program, and (ii) create a database of the statistics generated while undertaking the administrative procedures that can, ideally, later be linked to the MIT's existing information network and to an overall national trade and investment information network that could be developed in the future.

1.2 Methodology

The approach taken in this consultancy was to understand IDD QIZ functions by reviewing previous automation studies prepared for IDD and conducting extensive meetings with the IDD Director and QIZ Unit staff. The consulting team, comprising a business advisor and technical advisor, drew on the insights gained from among others; the AMIR Program funded study entitled *Jordan's MIT Center of Excellence Program: Information Management Assessment*. The team also conducted interviews with staff members at Amman Chamber of Industry, the Customs Department, AMIR Program, and JUSBP.

1.3 Report Organization

- ? Chapter 1 describes the objective and coverage of the study.
- ? Chapter 2 provides a clear understanding of the QPR and CO process and how the activities interrelate. It determines and measures key benchmark indicators.
- ? Chapter 3 undertakes a business process reengineering (BPR) of QPR and CO procedures within the framework of the E-Government initiative.
- ? Chapter 4 examines the prototype model developed for JUSBP to automate QPR and CO procedures.
- ? Chapter 5 prepares a budget to determine the lowest cost of a) automating QPR and CO procedures b) developing a data base of the statistics generated during the administrative process, and c) developing Web-enabled selected reports for the general public and internal use by MIT management.

2.   Current Processes

2.1   Qualifying Product Request (QPR) Process

The QIZ Unit of the IDD is responsible for processing QPRs and issuing qualifying product certificates and COs. Jordanian companies exporting to the US under the QIZ duty free and quota free regime must first meet the local content requirements, i.e. adding value of not less than 35 percent of the total appraised value of the product. Exporters then file COs at the MIT, the Amman Chamber of Industry, and process the export shipment at the Customs Department.

QIZ products should be consigned directly from Jordan or Israel to the USA. They should have at least 11.7% input from Jordan, 8% input from Israel, and inputs from USA and/or Gaza and/or West Bank up to total 35% of the unit free on board (FOB) value of the product. Permitted processes comprising the percentage of Jordanian input are described below according to the steps taken by the QIZ Unit officers.

Step 1: Verify the link between the buyer and manufacturer in Jordan

The officer makes sure that the purchase order is issued from a US-based buyer either directly to the QIZ-based manufacturing firm or to a foreign company that has its manufacturing operation in the QIZ. This is done by reviewing the purchase order (or Letter of Credit – LC) accompanying the QPR. This process includes verifying:

    a. The price of the merchandise expressed in FOB price per unit
    b. The HS code for that product, and
    c. The product name

Step 2: Calculate the Israeli input percentage of the unit FOB value

The officer verifies the list of suppliers from Israel. He then checks the invoices for input material purchased from the Israeli suppliers and allows around 2%-3% waste. In order to calculate the percentage of Israeli input, the officer sums up all unit prices of all Israeli inputs and divides it by the FOB price of the final product. This has to account for at least 8% of the unit FOB value.

Step 3: Verify other input material use and percentage of the unit FOB value

The officer checks the invoices of all other material that is imported and incorporated into the manufactured material. This step ensures that the material processed by Jordanian labor has actually been imported into Jordan. The officer also checks the unit prices of such material to account for its percentage contribution to the unit FOB price.

Step 4: Calculate the Jordanian input percentage of the unit FOB price

4.1 Labor Cost
    4.1.1 Payroll Sheet:
    An officer reviews the manufacturer's submitted payroll records to ensure the existence of a paid labor force.
    4.1.2 Social Security:
    The social security payment receipts are also reviewed to ensure actual payment of wages. The officer compares the paid social security amounts with an estimate of the social security amount calculated for the total labor indicated on the labor sheet.

4.2 Indirect and Direct Processing Cost:
An officer reviews supporting invoices of the reported total indirect and direct processing costs, such as electricity, water, fuel and transportation as well as factory and housing rent contracts, costs of meals, social security and dormitory costs.

4.3 Calculate the Direct Labor Cost:
Based on the direct production process labor sheet, which details the direct labor hours spent on each step of the manufacturing process, and the fact that the factory has already produced the material and as such can provide such detailed production information and number of produced units over a period of time, the officer calculates the total capacity of the manufacturer to produce the product per month.

a. The officer considers the bottleneck process on the production line. This is the main process that is responsible for producing the whole product (for example the sewing process)
b. The officer considers the number of units produced per line in a day. Units at peak time (maximum number of units produced in month), or the average number of units produced during a month, or the stable mode number of units (when production is stable), could be considered as alternative scenarios.
c. The officer then determines the number of laborers performing the bottleneck process per production line. The officer calculates the number of minutes spent in the operation by all those laborers on the line (considering the number of hours they work per day multiplied by 60 minutes multiplied by the number of laborers).
d. The officer divides the total number of minutes by the number of units per line (as in point b above) to obtain the number of minutes (time) spent to produce one unit of a product.
e. The officer then calculates the total time spent in direct labor by all such laborers (performing the main operation) in the month (consider number of working days in month multiplied by number of working hours per day multiplied by 60 minutes) and divide the total by the time it takes to produce one unit. This determines the capacity of the factory for that product in a month.
f. Jordanian Contribution is thus equal to Direct Labor + Direct processing cost. As such:
    1. Direct labor per piece = (total labor of local and foreign laborers) as per labor sheet divided by the capacity number of units.
    2. Direct processing cost per piece = total direct processing cost divided by capacity number of units. Therefore:

3. Jordanian contribution percent = (Direct Local Contribution per unit + Direct Production Contribution per unit) divided by the FOB unit price. This percentage should at least be 11.7%.

4.4 Total Cost of Production

To finally calculate the total cost of production the officer adds up all costs as follows:

Total cost of production = Israel contribution + direct labor cost + indirect labor cost + direct processing cost + indirect processing cost + other inputs

Another method of validation measurement that is used by the officer is that the summation of the direct labor cost + indirect labor cost + direct processing cost + indirect processing cost could be equal to 20% of FOB unit price.

When appropriate, the officer takes into account the double substantial transformation whereby the cost of material goes into the price of the unit and so covers the required 35%.

What takes time is the actual review by officers of all invoices and receipts submitted with each QPR in support of the direct and indirect costs incurred in the production process. This step can be made easier through computerization and proper categorization of supporting documents attached to the relevant data to be verified. This will aid in the validation processes of cost incurred in the production. Additionally, the calculation of the factory capacity and the Jordanian input percentage will definitely be made easier by computerization of the system.

2.2   Certificate of Origin Process

The QIZ factories first obtain a CO from the Chamber of Industry stating that the products are made in Jordan, in order to use it for their shipment to the US. Since it could be exported under different preferential arrangements, the CO does not have to specify if it was manufactured in the Jordan QIZ. This CO usually costs JD 15.

This CO is also used by the exporter at the Customs Department to account for the Temporary Admissions (TA) transactions. Once the exporter informs the Customs Department of the shipment of goods that had been imported under the TA arrangement, then he can reclaim the bank guarantee or reduce its amount. Shipments to the US by sea freight usually take 20 days, during which time the factory applies for the IDD CO.

Although, there appears to be no legal requirement under the QIZ agreement to issue COs, the CO is used for the purpose of the LC and bank guarantee transactions with the buyers in the US. The CO is usually couriered to the clearing agent in the US with the supporting documents necessary to allow the products to enter the US.

The QIZ division usually requests from the Chamber of Industry a faxed copy of the CO that they issue in order to verify the information provided by the factory to the QIZ division. This process ensures that the QIZ information is checked against that of the Chamber before issuing their IDD CO. Once issued, the IDD CO is signed by the manager. On average, the faxing process consumes around one roll of fax paper daily.

Originally, there was no charge for issuing this CO; however a JD five fee was later charged for every CO.

The IDD requests the Chamber to provide them with information regarding the COs they issue on a monthly basis, in order to verify and cross check the quantities and values of the shipments that are made from QIZs.

Accordingly, it is possible that the IDD and Chamber could cooperate on the main task of streamlining the issuance of the CO by having the necessary information entered from one point, share the entered information such that both COs may be produced as separate reports at the ACI and IDD. The feasibility of producing one CO could also be explored based on the legal, financial, and time requirements to do so.

2.3   Benchmark Indicators

The statistics that are currently available are scattered and are not consolidated in one database. While QPR data exists from 1999 to the present, the data is only well organized for the years 2002 and 2003. Based on IDD statistics of 2003, the average number of QPRs that are issued per month is 50 QPRs. The average number of COs that are issued per month is 850 COs. The total number of filed QPRs exceeds 1200, while the filed COs exceeds 17,000.

3. Business Options

3.1 Automating the QPR Procedure

It is clear from the review of the prototype model developed three years ago, that the QPR can be successfully automated, and that this system while short-lived, functioned satisfactorily. At the same time, the whole experience with the software company and later the complete halting of the system has left a negative impression among the management and staff of the IDD. This feeling has been further exacerbated with the delay in getting a new system up and running, and the demands on the QIZ division to provide timely statistics on QIZ exports given the current state of public skepticism of their value to the economy.

Therefore one of the options that could be explored is that of reviving this system, by either properly installing it using the necessary infrastructure by MIT IT staff, or by contacting the software company that originally developed it, under a maintenance contract if necessary. This would enable a faster start-up time, however, the original prototype design would have to be expanded to provide further functionality, including a backend database.

3.2 Automation the CO Procedure

The CO process is one that is repeated twice, once by the Chambers and again by the IDD. As far as anyone could determine, the issuance of the CO by the IDD is not a legal requirement by the QIZ agreement. However the process is maintained in order to document and protect all COs from any discrepancies, and thus keep Jordan's credibility safe in case there is a need to check the validity of any shipment.

The Amman Chamber of Industry (ACI) has developed a web-based application system for its members. This system allows ACI members to log in and enter their information in order to obtain a Certificate of Origin (CO). The system has been integrated with a document management system that allows all the necessary documentation accompanying a CO to be received via email as scanned images into a database record that is linked to the specific CO. This includes the invoice of the manufacturer. The system will allow for electronic payment of the transaction fees, and will eventually be expanded to serve the Jordan Chambers of Industry.

It is conceivable that the CO process at IDD could be streamlined with the Chamber's, by requiring that the information of the COs is made available to the IDD electronically. The cost of doing this could be agreed upon between the two organizations.

The business option that is proposed is to eliminate the need for developing a CO system, and to rely on the already developed system at the ACI. This system is capable of accommodating all of the information on the current CO in use by IDD, and any missing data fields could be added on the ACI CO existing data entry screens. This option is realistic given that there is already cooperation between ACI and IDD. ACI clearly stated that they are willing to cooperate with IDD on this issue.

This one-point data entry of information will reduce effort done at the IDD of repeating

entry of CO information all over again. Sharing of the CO form will enable the production of the CO for ACI and IDD simultaneously. IDD will be able to print out the CO and sign it. Then it will be ready for the manufacturer to pick it up.

While currently digital signatures are not yet acceptable because of the lack of a secure government network in place, and a standard system of verification, the following options are suggested:

1. Cancel the need for a signature from IDD, especially if the option of issuing a CO from the Chamber is adopted.
2. Maintain the need for a signature or a verification method by using a secure online protection hardware mechanism that allows the Director to use it to verify that the information is valid, and a signature is sent electronically.
3. Eventually, with time, electronic signatures may become a reality, and as such, they will be used.

The option of canceling the CO signature by the IDD was not favorable to Mr. Amer Hadidi because of the considerations related to the overall QIZ agreement.

3.3 Developing a data base of the statistics generated during the administrative process

The QIZ staff has developed an Excel sheet as a temporary measure that captures some of the data from the COs. This information has been used to respond to questions posed to the division regarding the type of products, their origins, etc.

The IDD have developed a log in Microsoft Excel which holds information from COs as a temporary measure. The staff at IDD realize that this is a transitory step that would require data to be transferred to the system once it is developed. The Information from the COs has been reduced to cover only certain fields for the purposes of gathering statistics relevant to the Government. Those may be used as guideline for key historical identifiers upon taking on the work of digitizing all filed historical information.

3.4 Digital Signature

PKI infrastructure and a reliable Certification Authority body are the basis for digital signatures. Currently in Jordan both are still not established, and digital signatures cannot be technically used. However, AMIR/USAID is considering a project with the Customs Department to pilot digital signatures on certain customs documents.

iKey

Another method that ensures the authenticity of the person entering the website and submitting information is the use of external verification devices. For example, an iKey token that enables the web server to authenticate the iKey user and verify his/her identity before allowing entry or use of certain functions. The iKey acts like an ATM card where a Personal Identification Number (PIN) should be entered upon plugging the iKEY to the USB port. The iKEY then communicates with the web server and requests authentication.

In addition, the iKEY user may download a digital signature on the iKEY itself (versus on the computer disk). This digital signature may be used for digitally signing emails. An example of its use, is having a digital signature assigned to IDD director downloaded from certification authorities such as Verisign directly onto the iKEY belonging to the director. This iKey will be used for signing emails having attachments such as Certificate of Origins or QPR forms.

As long as the digital signature is on the iKEY, it is inaccessible by anyone else except the director who is the only one who knows the PIN for access.

Envisioned steps for QPR computerization:

The manufacturer/exporter is provided by a password and is identified by his enterprise number. Both are used to enter the website. Another method that ensures the authenticity of the party entering the site is the use of the iKey-based intranet authentication technology.

The client-side application will allow the manufacturer/exporter to:

1. Fill in the QPR web-based form, scans and attaches all the supporting documents to the relevant data. For example, input material invoices will be attached to the corresponding QPR filled fields of the input materials. Then the manufacturer submits the QPR and the QPR is added to the database, and notification to the IDD officer is issued.
2. Display of previously entered general information of company and products
3. Automatic totaling of material costs by source, direct and indirect labor and processing costs.
4. Validate entered information and its submission
5. Print submitted information and list of uploaded documents
6. Application will send notification to sender that QPR is added on the processing database and generates a Serial QPR number for further inquiry processing.
7. A manufacturer may receive inquiries from officers and may respond with further document uploads or e-mail messages. The Serial Request number is used to keep the trail of correspondence.

The QPRs on the database are reviewed by the officers using a backend application. This application allows for the following functionalities:

1. Review of the submitted QPR information
2. Review of all attached documentation – categorized by type. This allows for automatic display of the supporting document that relate to the reviewed data. This method provides an easier review mechanism.
3. Allowing the choice of the type of the number of units to be considered per production line. This could be the average number of units per day calculated over a period of a month at maximum, the peak number of units, or the mode.
4. Allowing for the calculation of the factory capacity and the Jordanian and other countries input percentage

5. Pulling out historical information to validate direct and indirect costs from previously submitted QPR requests of same manufacturer or by similar manufacturing establishments.
6. Officer may notify the manufacturer of the approval of the QPR, or of further requests of information. The Serial Request number is used to keep the trail of correspondence and further documentation
7. Once the QPR is approved, a QPR number is produced, all key historical identifiers will be accumulated to the statistical database for historical and statistical processing.

Upon approving the QPR, the manufacturer will receive the QPR number to be used in generating all Certificates of Origin for shipments.

4. Prototype Model Examined

JUSBP Prototype System

The JUSBP prototype system was developed in 2001 by a local company called SigmaSoft. The system was developed as part of the E-Government initiative to develop an E-Directorate project funded by JUSBP. The purpose of developing the prototype was to illustrate the concept of an E-Government service that would reflect the benefits of a much needed service that is also highly visible because it relates to the QIZ factories. The system, which cost around JD 6,000, only functioned for three months. However, during its launch at Al Hassan Industrial Estate, it was widely publicized in a ceremony attended by the US Ambassador and all the QIZ manufacturers.

Although there are different versions of what actually happened with this system, the following is the most plausible.

The company SigmaSoft that developed the prototype used a trial version of SQL server software program needed to run the prototype which was only valid for three months. Pursuant to customary industry practice the Source Code for the system was not provided to IDD, so they could not make use of the system without the software company's assistance. The IDD later did request the software company to reinstall the program. Reinstallation was successful for a short period. However, it appears that IDD and SigmaSoft did not agree on a fee for the reinstallation nor on a follow-up software maintenance agreement.

According to Mr. Nabil Antari who was working for JUSBP at the time, the system worked and could be easily re-installed. The difficulty is that since it works on-line, it requires an IP address, and that may have been the problem with its reinstallation and why it did not work properly. Another way of putting it, the system was not provided with the proper stable environment that it required in order for it to function smoothly, and it seems that it was moved around several times and therefore did not function correctly.

The consultant unsuccessfully tried to contact Mr. Rami Al-Karmi from SigmaSoft to discuss the system and to inquire about the status of the source code – if it was available to the MIT.

The IDD did not have the system on any of their computers; rather it was installed on one PC in the IT department. It was brought in and the computer set-up in order for this consultant to preview how the prototype works. The system was developed using ASP and Macromedia Flash for the web-pages and Ms. SQL/Server server as database engine. Unfortunately the system did not function properly and it was difficult to review.

While it was not possible to actually see the system in action, from what was described, it was possible to get a good understanding of what it does. The system seemed to satisfy the basic needs of the QPR, but needed some "bells and whistles" that were to be added in future versions. The prototype has three main sections. Each section had different functions with different data entry screens. These sections are: 1. Company Registration, 2. QIZ Staff, and 3. QIZ Management. Each section requires a name and a password. The

companies accessing the first section cannot access the other sections, while the QIZ staff section cannot access the QIZ management section.

1. The Company Registration section allows the company to register online and enter all the information required of and are included in the manual form.

2. The QIZ Staff Section allows the manager of the QIZ section to assign a certain number of companies to his staff, in the same manner that is currently taking place manually. Each staff member is given a name and a password to enter the system and then checks the entries of each company assigned to them.

   This section includes a series of on-line screens requiring the information from the QPR forms to be filled out. After this information is filled out by each factory, the system can process them using the built in formulae that establish the percentages of every type of input clearly requested by the form, and allows the QIZ staff member to properly monitor whether the firm is complying with the requirements of the QIZ.

   Thus the system allowed for the validation of the number to be done electronically, since all the information is there. At each step of the process, the staff member could phone the factory submitting its QPR, to inquire, accept or reject any of the numbers that have been submitted, and request the company to adjust them accordingly.

3. The third section is for QIZ Management. It is used by the manager to check the status of a certain QPR transaction and determine if there are any problems with that transaction.

5. Automation and Costing Options

5.1 Overview

The ideal system for the IDD would comprise three parts:

1. The front end system allowing for a web-enabled submission and follow up of QPR forms and possibly a Certificate of Origin request form
2. The backend system composed of the database where QPR information is kept and the programs needed to manipulate the information and produce historical and trends reports for internal use at the IDD or through the Internet for public use.
3. The Certificate of Origin (CO) issuance and follow up – This may also be a web-enabled service with possible connection with the Amman Chamber of Industry e-service for exchange of CO forms and information.

As far as was able to be ascertained, the JUSBP prototype only comprised part 1. above.

5.2 Options for development of an active system

Option 1: Developing a new web-enabled system and backend statistical database

This option is the most costly and requires at least 3-3.5 months work (or approximately 90 man-days). An analyst/programmer and an Internet programmer are required.

The system would meet the ideal system requirements. It would also make use of the Oracle database engine already present at the MIT. The system would offer:

Module One:
1. A more secure log in and password management module. This will also track QIZ manufacturers' company registration information and entity numbers
2. A more detailed QPR form for the manufacturer to fill. The form captures all labor material, and operating costs, allows for the attachment of supporting documents in a categorized manner, and offers flexible manufacturing capacity calculation methods for capacity and country input percentage calculation – please refer to previous section for manufacturing capacity and quota calculation methodology
3. A management module that offers timely communication of QPR and CO status to manufacturer
4. A user-friendly tool for the IDD officer to use for checking the provided information in the QPR form against the attached supporting documents and to perform his/her calculation version of the manufacturing capacity and Jordan's as well as other countries input percentages.

Module Two:
5. A web enabled Certificate of Origin module to automate issuance of certificates against the QPR and inter-connect with the ACI certificate of origin e-system. This module will receive Certificate information as generated from the ACI and allow for adding QPR and IDD related information before printing it out for manufacturer.

Module Three:
6. A backend system for use by the IDD officers to enter key historical QPR and CO information into a well-designed database and allows for the production of the statistical and trend reports.
7. A web-enabled reporting tool that accesses the database and produce pre-designed statistical reports at the request of the public.

The new system's minimum cost will approximately range from JD 9,000 – JD 10,000.

Option 2: Using the Prototype as a base for developing an enhanced system

This option requires that the source code of the prototype system be purchased from SigmaSoft. This source code will then serve as the base to enhance the web-enabled front-end system for QPR submission and follow up, and to build over it the back-end system functionalities and web-enabled public reporting as well as the certificate of origin issuance and follow up.

Having the source code will enable the migration of the database from MS SQL/Server based to Oracle and thus make use of the MIT database engine platform and avoid the purchase of the SQL/Server software (the cost of SQL/Server for 5 users is around JD 1,000). On the other hand, having the source code will only reduce the development time and effort needed to build a new comprehensive system from scratch by 10-15 man-days at most. This in turn may reduce the cost of the development by approximately JD 1,500 only and the delivery time to 2.5-3 months period.

This option assumes that SigmaSoft will be cooperative and inclined to sell its source code. But for this option to be worthy, Sigma Soft must be willing to sell the source code for less than JD 1,500. Yet as a rule of thumb in the ICT Industry in Jordan, the source code costs twice as much as the system's that is SigmaSoft may be asking for around JD 12,000 for the source code.

Option 3: Using the Prototype as is for immediate use, with a possible annual maintenance contract with SigmaSoft

This option will allow for the immediate use of the prototype in collecting QPR information using the Internet. SigmaSoft may be contracted for setting up the system and maintaining it, as well as for training the staff on its use. It also requires that IDD purchases Microsoft SQL/Server database engine for at least five users at a cost of JD 1,000 approximately.

The maintenance contract is negotiable with SigmaSoft. It is recommended that it should not exceed JD 6,00 (10% of system cost) per annum.

5.3 Population of database with historical information

In order to produce reports for statistical information and trends, the key historical data in QPR and CO forms should be digitized. This can be done through the entry of key information and scanning in of key supporting documents, into a well-designed database.

This database, if well designed, may be the same one used by the web-enabled system receiving and keeping the newly generated QPR and CO information.

Consequently, two possibilities arise. The first one is that the database used by the prototype system may be used as a reciprocal of key information from historical QPR forms and supporting documents, and that the provided user interface will be used for such data entry. This will allow for immediate work to start in digitizing the older QPR forms.

The second possibility is that the existing database structure cannot be used and a new database may be needed as well as a new user interface for entering the data. In this case this will be similar to module three described above and will have a similar cost.

In all cases, the above testing phase of the prototype system will clarify this situation as well.

Another point to mention is the separate cost involved in defining the needed key historical information and entering it into the database. This cost must be accounted for and depends on whether the IDD staff or an outside contractor will be performing the database population, and the type, size of data and effort involved in the data entry process.

Table Costing of Automation Options

	Estimated Cost				
Option 1	**Source Code**	**Microsoft SQL/Server**	**System Development**	**Annual Maintenance**	
Developing a new web-enabled system and backend statistical database	-	-			
Module One - QPR (8-9 man weeks)			JD 5,700-JD 6,500		
Module Two - CO (1-1.5 man weeks)			JD 7,00-JD 1,000		
Module Three –Statistics (3 man weeks)			JD 2,200 – JD 2,500		
Maximum Estimated Total System Development Cost			JD 8,600 – JD 10,000	JD 1,000	
Option 2					
2- Using the Prototype as a base for developing an enhanced system	< JD 1,500 (ideal case) JD12,000 (worst case)	-			
Reduced Module One - QPR -Ideal case (6-7 man weeks)			JD 4,200-JD 5,000		
Maximum Estimated Total System Development Cost			JD 7,100 – JD 8,500		
Option 3					
3- Using the Prototype as is with an annual maintenance contract with SigmaSoft		JD 1,000	-	JD 600	
Maximum Estimated Total System Development Cost			JD 1,600		

5.4 Recommendation

Clearly Option 3 is the less costly but it cannot be considered as the final solution. Option 3 will allow for immediate start of the computerization process. Yet, based on the discussion with the persons from SigmaSoft and JUSBP, involved at the time in the development of the prototype, the prototype system mainly caters for the front-end system allowing for a web-enabled submission and follow up of QPR forms. It does not manage CO applications nor provide any backend database. It is, therefore, not a complete system and should be treated as 'a prototype' which may later be developed into a comprehensive system. Furthermore, developing a new system will permit MIT IT staff to be involved in development, implementation and maintenance.

Also, it is crucial that if this prototype is insufficiently computerized, it should not be launched as an E-government prototype to be used by QIZ manufacturers. Therefore it is recommended that a testing step precede any level of adoption of this prototype. Consequently the prototype system should be activated again at IDD premises, and be properly tested by the IDD staff in cooperation with a few manufacturers. This testing period of the system will determine whether the system has all the minimum required functionalities and that it may actually be launched, at least as a beta version, for use by the manufacturers. In addition, this testing process will determine what is missing in terms of functionalities and what should be enhanced and elaborated on upon further development. The testing phase will also allow for simulating the new process of work at the IDD and will show how work will be affected with the use of a computerized system. It will also uncover the skills that should be developed among the staff. Only after this testing period completes should the IDD consider using the system and possibly contracting SigmaSoft for prototype maintenance.

IDD should eventually consider developing a more comprehensive system, as per options 1 and 2 discussed above. This system should respond to all of its needs including the upload of historical QPR and CO information.