TITLE: POINT OF SALE – GST AUTOMATIC REPORTING SYSTEM

TECHNICAL FIELD

This invention relates to a Goods and Services Tax or Value-Added Tax (thereafter called as "GST") automatic reporting system forwarding retail sales transaction information and respective GST data via the Smart GST device installed on the Point of Sale system ("POS") to a server located at a remote location such as Inland Revenue Authority. This invention ensures all the retailers who have collected the GST on behalf of the authorities to report and forward the GST to the authorities accurately and promptly.

BACKGROUND OF THE INVENTION

GST is a tax on consumption, an indirect tax charged on imports and on the value added to goods and services sold by one business to another, or to the end consumer other than those exempted or zero-rated. This tax is applied at each level of the value chain and will be applicable whenever value is added to goods or a service.

GST is a fiscal policy feature in over 140 countries. Many developing and emerging economies have been transforming their tax revenue bases by progressively moving from direct taxation to consumption taxes such as GST in recent years.

GST requires good and proper record-keeping and reporting by business that need to be registered. This can lead to improvements in the maintenance of proper accounts and financial records. The work required to get business ready for GST implementation can be demanding. Employees have to be trained. IT and accounting system need to be modified. Certain processes, structures and relationships must be reviewed to take into account the GST regime.

GST was implemented in Singapore at a single rate of 3% on 1 April 1994, with an assurance that it would not be raised for at least five years. To cushion the impact of GST on Singaporean households, an offset package was also introduced.

Simultaneously, corporate tax rate was cut by 3% to 27%, and the top marginal personal income tax rate was cut by 3% to 30%.

In 2002, the Economic Review Committee reviewed Singapore's tax policy, and recommended that further tax reform was necessary to bring in new investments. The committee noted that other countries were aggressively cutting their direct tax rates in order to attract internationally mobile capital and labour, and recommended that the government rely more on GST for its tax revenues, while again cushioning the impact on Singaporean households through an offset package.

The government accepted the committee's recommendations. The GST rate was increased from 3% to 4% in 2003, and to 5% in 2004. Each increase was accompanied by an offset package that was designed to make the average Singaporean household overall better off, even after accounting for the additional costs imposed by the increase in GST rates. Direct tax rates were also reduced correspondingly.

On 15 February 2007 (Budget Day), Second Finance Minister Tharman Shanmugaratnam announced that the GST rate would be increased to 7% with effect from 1 July 2007.

The rate increase was accompanied by an offset package to help Singaporeans with the increase in GST, and which would cost the government $4 billion over five years. The government argued that the offset package would help the majority of Singaporeans offset their increased GST costs for several years. The offset package consisted of direct transfer benefits, in the form of cash payouts (GST credits, growth dividends, senior citizens' bonuses), CPF top-ups (post-secondary education account top-ups for students, Medisave top-ups for older Singaporeans), and rebates (on utilities and public housing service & conservancy charges). Those who earned less or lived in smaller homes received more benefits. The government also argued that the Workfare Income Supplement, a wage subsidy, would provide significant support for low-income workers on a continuing basis even after the GST offsets have been distributed.

The government also cut direct tax rates, continuing its practice of lowering direct tax rates since 1986. As of 2010, the top marginal rates for corporate tax stood at 17% and personal income tax at 20%, with effective rates being much lower.

The implementation of GST requires all the retailers and merchants throughout the country to report all the transaction made with consumers and the amount of GST collected for each sold item to the authorities for tax purposes.

For the avoidance of doubt, a retailer must compute the GST for each consumer transaction, add the computed GST to the invoice for the goods sold, collect the GST from the consumer with the purchase sum, deposit for safe keeping the collected GST and finally remit and account for the collected GST to the authority, eg. Inland Revenue Authority, on the periodic basis, which in this case on a monthly basis upon the receipt of the statement from the authority. Generally, the authority will compensate the retailer, who is acting as the agent of the authority on GST collection, by allowing the retailers to hold the collected GST, which belongs to the government, and keep the periodic interest accrued on the collected GST during each collection period.

As the GST reporting system is on an "honor system", to which the consumers and authorities have no way to verify that all transactions made by the retailer and the GST collected thereon are reported to the authority, therefore, many retailers may not report each and every transaction made with the consumers to the authority, either intentionally or unintentionally, so that they could avoid declaring their actual gross income in their tax returns and keep the GST collected from consumers for their own enrichment. This action may add up to a significant loss for the authorities as more and more retailers accidentally forget or neglect to report transactions and turn over the resulting collected GST. Furthermore, the consumer has no way of knowing of the collected GST is being turned over to the authority and it is an unfair practice from the irresponsible retailers.

On the other side, the retailers are required to hire additional workforce to handle the routine tax reporting by following the conventional manual reporting system.

Based on the above scenario, it would be recommended to have an efficient and effective method and system for collecting and reporting GST to ensure full recovery of the collected GST from the retailers and to reduce the additional operation cost borne by the retailers as a result of the additional staff.

SUMMARY OF THE INVENTION

The principal objective of this invention (Point of Sale - GST automatic reporting system) is to provide an efficient and effective GST reporting system to overcome the collection problems that arise during the implementation of the GST in Singapore.

This invention comprises of:

a) a general POS system at the retailer location, for processing sales transaction data and computing GST payable by the consumer to the retailer based on the total sale.

b) a Smart GST device at the retailer location, for capture and forwarding all the transaction data (which includes the description of sale, amount of sale and GST collected) from the general POS system to a remote location and subsequently request and receive the Approved Transaction Code from the remote location, and finally to store the transaction data for retailer's reference.

c) a receipt printer at the retailer location and in communication with the Smart GST device, for printing the consumer official receipts, which includes sale transaction and the GST paid by the consumer.

d) a report printer at the retailer location and in communication with the Smart GST device, for printing the periodic summary of the transaction data.

e) a server at a remote location, in communication with the Smart GST device, for receiving all the sales transaction data, acknowledge receipt of the said data and revert simultaneously with the Approved Transaction Codes to the Smart GST device.

f) a server at a remote location, for storing all the sales transaction data, GST data and Approved Transaction Code and serve as the back-up.

g) a server at a remote location, for processing periodic GST statements stipulating the amount of GST due to the authority by the retailer.

h) a server at a remote location, for storing all the periodic GST statements and serve as the back-up.

i) a telephone call centre, for taking care of the inquiries made by the consumers to verify the authenticity of the official receipt printed by the retailer.

j) a GST verifying server, for taking care of the inquiries made by the consumers via web service.

This invention will now be described with reference to certain embodiments thereof as illustrated in the following drawings.

DETAILED DESCRIPTION OF THE DRAWINGS OF THIS INVENTION

Diagram 1 is the overview of the Smart GST Device 101 of this invention showing the input and output of the device located at location 1. Its input consist of POS computer 302, Cash Drawer 301, Credit Card Payment Device 303

Diagram 2 is the logical process flow chart which more particularly illustrates the steps taken by consumers and retailers in completing a transaction cycle. The system and method as set forth in Diagram 1, 3, 4 and 5 begins at the Start command 201 with the consumer at step 501 where the consumer purchases an item (either goods or services) from the retailer at location 1. When the consumer brings the item(s) / order(s) to be purchased to the retailer check out POS computer 302, the retailer at step 202 closes the order and prepares an initial bill for consumer's verification. The consumer has to make a decision 203 at step 502 whether to accept or reject the initial bill. If it is rejected, the retailer will go to step 204 to regenerate the initial bill. Once it is accepted, POS computer 302 in step 205 calculates the amount of the transaction including the cost of the good or service being purchased and the GST due on the transaction. Subsequently, the consumer pays grand total 405 at step 502 and selects the payment mode at step 206 either using credit / debit

card 207a or cash 208. If the consumer opts for credit card 207a, a request for approval 207b to be sent to the Card Authenticator 305 of the service bank after the retailer enters the credit/ debit card number of the consumer by using Credit Card Payment Device 303. The system then waits for the approval of the transaction at decision instruction 207c. If no approval is received, the consumer has to repeat step 206. If approval is received, the transaction data to be captured, sent and stored at GST Transaction Server 307 in step 503 and 210 via Smart GST device 101 and simultaneously the GST Transaction Server 307 reverts in step 504 with the Approved Transaction Code 406. The Smart GST device 101 stores the same transaction data in its memory and the data can be summarized and retrieved to the Report Printer 313 for printing the periodic report. After the retailer is paid, the retailer prints the Receipt 3 (see Diagram 4) in step 211 and presents it to the consumer.

This invention allows consumer at location 1 to carry out step 505 via web service to the GST Verifying Server 306 or call to the Call Centre 311 at location 2 to make sure that his/ her transaction(s) has, in fact, been reported to location 2. The consumer will receive the confirmation via step 509.

Diagram 3 shows the hardware requirements in both location 1 and location 2. Location 1 includes POS computer 302, Cash Drawer 301, Credit Card Payment Device 303, Smart GST device 101, Receipt Printer 304 and Report Printer 313. The Credit Card Payment Device 303, which is either integrally formed with POS computer 302 or independent with respect thereto, is connected to Card Authenticator 305 via telephone line 312, to verify the validity of the credit card and authorization of its cardholder. It is to allow the consumer to make the payment 502 to the retailer at location 1 by using credit card or debit card. The consumer can also make payment 502 by cash and Cash Drawer 301 will be used to handle and keep the cash.

Receipt Printer 304 prints receipt 3 in step 211 and Report Printer 313 prints periodic summary of the transaction data in step 510 for preparing financial reports.

The memory in the Smart GST device 101 stores all the transaction data in receipt 3 and the data can be accessed periodically by POS computer 302 while a periodic summary of the transaction data can be generated and to be printed by Receipt Printer 304 in step 510.

Location 2 includes GST Verifying Server 306, GST Transaction Server 307 and its back-up server 310, GST Reporting Server 308 and its back-up server 309 and a Call Centre 311. GST Verifying Server 306 allows the consumer to carry out step 505 according to the Approved Transaction Code 406. Another option for the consumer is to call phone number 407 via Call Centre 311.

GST Transaction Server 307 receives all the transaction data from the Smart GST device 101 and reverts with the Approved Transaction Code 406 to Smart GST device 101. Back-up Server 310 saves another set of transaction data for safekeeping.

Once received the transaction data from GST Transaction Server 307, GST Reporting Server 308 compiles the data and generates statements and send to the retailers in step 506. Thereafter, retailers remit the GST payments to the authority in step 507 and GST Reporting Server captures the GST payments from the retailers in step 508. All the bills and payment status are also recorded in the Back-up Server 309.

One of the optional features of this invention is the provision of another set of servers located at each a state. These servers connect between GST Transaction Server 307 and the Smart GST device 101 of the numerous retailers at location 1 spread throughout the state. Each server when provided is responsible for gathering all the transaction data appears on Receipt 3, sorting the information and forwarding the same to GST Transaction Server 307 as well as to revert with the Approved Transaction Code 406 at location 2. In such a manner, the burden placed upon GST Transaction Server 307 with respect to receiving, sorting and storing transaction data and revert with the Approved Transaction Code 406 would be lessened with the additional servers taking on much of this burden.

DIAGRAM 4 illustrates an example of the Receipt 3 which will be provided to the consumer from the retailer in step 211, being printed by retailer printer 304 after receiving the information from Smart GST device 101. Receipt 3 is showing the description of sale 402, the amount of sale 403, GST collected 404, grand total payable 405, Approved Transaction Code 406 and the phone number 407 for the consumer to carry out step 505 via Call Center 311 or access to the GST Verifying Server 306. To enhance the security, bar code 401 will be printed on the receipt 3. The GST Transaction Server 307 in step **6** will provide both authentication and transaction processing services for the overall operation of the GST Automatic Reporting System. During system start-up, the system will perform self check and later enter into ready state. The administrator has the ability to continue or shutdown the server 307 during this state. The server 307 can be shutdown at any time by terminating the transaction server program that runs in a loop.

In ready state, the server will listen to incoming GST transaction request as shown in step **601**. If there is a connection request, the GST Transaction Server 307 will carry out protocol handshake between the Smart GST device 101 and the GST Transaction Server 307 to ascertain the transmission parameters. After that protocol handshake is done, the GST data is transmitted from the Smart GST device 101. The data is encapsulated in a record format containing a number of fields, i.e. *date, time, merchantid, companyid, transaction id, sales, GST collected, and auth_challenge*.

Once the transaction request is accepted, the GST Transaction Server 307's Listener component will extract the auth_challenge field out and forward it to the authentication module in **602**.

If the authentication proves to be invalid, then the connection will be closed in step **603** and the system will return to ready state in step 6. If there is no intervention, the system will continue to invoke the GST Transaction Server 307's Listener.

If it passes the challenge, then the request is a valid request and the system will continue to search the retailer details in step 604.

The search company file function in step **604** works by performing queries on the GST master file located in the authority HQ. Only retailer registered with authority will be able to use the system. The Smart GST device 101 will also serve as unique identification for each individual retailer.

If the tax file for the retailer is not found, the process will terminate and the connection will be closed as in step 603. The system will then return to ready state in step 6.

If the GST tax file of the retailer is found, then the system will proceed to step **605** whereby the system will verify the total amount of the transaction against the computed GST to ensure correct computation. Any errors of computation will be corrected by the system at this stage.

Once the computation is finalized, then the system will proceed to generate an Approved Transaction Code 406. This code is used to prove the authenticity of the GST Bill and also to prove that the transaction is captured completely by the authority.

After the stage is successfully completed, the authenticated records will be forwarded to step **606** which is responsible for storing the GST transaction into a database, i.e. GST transaction file and record the status in log files located in the same database. The system logging process is done concurrently and transparent of the users.

The record storage and system logging is verified in step **607** to see whether the transaction is successful or not.

If the system encounters errors in GST transaction recording or system logging, then the errors will be recorded by the error logging routine in step **608**. After that, the system will proceed to close the connection and return back to ready state.

Once the record storage and system logging is completed successfully and verified in step 607, then the system will generate a reply with corresponding status in step **609** to the Smart GST device 101. The reply is in a record containing status and Approved Transaction Code 406. After step 609 is completed, the system will close the connection and return back to ready state.

The GST Reporting Server 308 in step **7** allows on-demand, daily, monthly, yearly GST statements to be printed for individual retailers.

Step **701** performs consolidation and computation for on-demand, daily, monthly, yearly GST. It will perform drill down on the data from GST master file and GST transaction file. The respective records will be consolidated and collated according to the sort order requested by the system users.

Once the computation is completed, the result will be forwarded to step **702** where an integrated statement can be compiled using the previous computed results together with GST statement file and GST payment file.

Once the result is computed, the users have a chance to print the statement or just view it online in step **703**.

If report printing is chosen, the system will proceed to step **704** to produce paper printout for the statement report according to the sanctioned format. After that, the system processing will end.

The GST Verifying Server 306 in step **8** allows general public to query the authenticity of the GST receipt 3 given by a retailer.

During system start-up, as in step **801**, the system will perform self check and later enter into ready state. The administrator has the ability to continue or shutdown the server 306 during this state. The server 306 can be shutdown at any time by terminating the query server program that runs in a loop.

The system will run in an automatic mode, listening to the query requests from general public. The requests can be in the form of web service query, sms query, phone-in support, and proprietary software access.

Step **802** allows the requests to be validated for authenticity. The authentication process is intrinsic, meaning that no external intervention is required. The GST Authorized Transaction Code 406 can be easily verified with the bill info using just internal checksum processing.

The result of the validation process will then be passed to step **803**. If the query passes the validation, then the process will continue to step 804, else the system will just respond to the user that the bill is a counterfeit, since the bill does not passes through validation.

If the query passes the validation, then the system will proceed to step **804** to perform a search for the details of the bill, including the date, time, venue, company id etc. This process will require data to be extracted from GST master, GST payment file, GST transaction file and GST statement file.

If the search is not successful, then the system will respond with an unavailable reply. This does not imply that the bill is a counterfeit since it already passes validation. It may be because the database is offline or under maintenance.

If the search is successful then the system will proceed to step **805** where detailed results of the bill and transaction will be returned to the querying device.

IN THE DRAWINGS

Diagram 1 is the overview of the Smart GST Device of this invention.

Diagrams 2 is a logical process flow chart illustrating the way the retailer's POS system of the first embodiment in concluding the sales, process and forward the sales transaction data, including the collected GST, to the authority.

Diagram 3 is the external block diagram on the hardware requirements for both the retailers and the authority.

Diagram 4 illustrates an official consumer receipt to be printed from the retailer's POS system according the first embodiment of this invention.

Diagram 5 is a block diagram flow chart of the POS GST automatic reporting system by highlighting the roles of each party in this invention.

Diagram 6 is the flow diagram for the GST Transaction Server that authenticates and records the GST transactions.

Diagram 7 is the flow diagram for the GST Reporting Server that provides printing of GST statements.

Diagram 8 is the flow diagram for the GST Verifying Server that allows the consumer to check the authenticity of the GST receipt.

CLAIMS

We claim:

1. The Point of Sale - GST Automatic Reporting System including the following:
   - A Smart GST device that captures the sales transactions, computes the GST amount, transmit the record to authority (such as Inland Revenue Authority), and authenticates the receipt with a specific authorization, 3D barcode via phone call, sms or web service.
   - A GST Transaction Server (GTS) located at the remote location that allows the Smart GST device to connect and report the sales tax from the downstream sales or retailer location and send Approved Transaction Code (ATC) to the Smart GST device.
   - A GST Reporting Server (GRS) that computes the monthly taxable GST amount; prints out the monthly statement and send it to the retailers.

2. The Point of Sale - GST Automatic Reporting System as stated in claim 1 shall include methodologies, design, communication mechanism and client-server technologies that enable the system to function.

3. The scope of Point of Sale - GST Automatic Reporting System as stated in claim 2 covers the complete techniques for hardware, software, and system design of the servers (GTS and GRS); and techniques for hardware, software and firmware design of the client's Smart GST device.

4. The Point of Sale – GST Automatic Reporting System as stated in the preceding claims does not require any change to the existing POS infrastructure at the downstream sales or retailer location.

5. The Point of Sale – GST Automatic Reporting System as stated in the preceding claims also applicable for the implementation of the automatic reporting for the existing Sales and Service Tax.