ROLE OF UBIQUITOUS COMPUTING IN E-COMMERCE

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Abstract:
Ubiquitous computing eliminates the bottlenecks of conventional business in such a way that users get a thrilling experience as well as their purpose is also served.The main underlying principle in ambient intelligence is that computing ,communication ability is stored in smart devices which can be objects ,locations, people. Conducting online business with smart devices increases savings in overall cost for all stakeholders involved. Though reliability is a challenge research work in this direction has already been initiated by the major bodies working in this area.

Index Terms: Ambient, EDI, Smart, VMI & Ubiquitous

1. Introduction:

In present business era, smart services adopt themselves according to market scenarios .As market scenarios are dynamic, so the design of the devices offering smart services should be flexible. This element of flexibility in the design of smart devices has inherent challenges in themselves which sometimes reduce the quality of service for the device. Nevertheless the advantages weigh over these minor challenges while deploying and using the smart devices. An emerging trend was set in military grounds by the Department of Defence (DoD), USA by making use of RFID tags at container level to supply the inventory products to minimize the lead time when demand was made. This was put to use in business markets slowly by the market giants like WalMart in US, Tesco in UK. By early 2000's when it was put into practice certain degree of suspicion in conducting effective business was obvious but after few years the impact was noticeable and now it has become a essential factor in creating a brand image for a company in the market. Every organization weighs down its options to use smart devices in the market to make its supply chain even more robust .Return on Investment is analyzed prior to using ubiquitous devices. In an ambient intelligent market possibility of delivering services are at dimensions which technology can achieve with minimum cost. The basic factor which must be considered while introduction of ubiquitous devices in conducting business are the physical environment, time, device ,network characteristics ,semantic knowledge of the context. The benefits of the networked business models are multiple but the main objective remains the same, at the end it must be a win-win situation for all parties. Supply chain ubiquitous computing applications are well in place but when it comes to development of ubiquitous consumer applications, design principles are weak as requirements are ill defined. The main difficulty is that the consumer shopping trends are diverse and making a unification framework towards this kind of trend is challenging. But still work is in progress to counter this issue and in future it will be definitely being solved.

2. Basic Model Used:

Using smart services in supply chain management cycle, process can be managed efficiently. Even outstanding services can be channelled to other organizations with minimum cost of transfer. Three layers are mainly designed. The first one is the design channel, where the prototypes are involved with smart principles. Then exists the

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manufacturing channel where smart devices are used as tools for making the product. Finally the channel of sales exercises flow of smart services through product deployment, product sales. All the three channels are maintained in smart environment. In addition to the process-shown above, user's feedback can be playing a vital role in R&D of a organizational which caters to a smart-market. The basic principle in constructing a smart environment is the intelligence is controlled by end users not by the network. So, to control whole network, the user should be able to deploy applications in very other user's device then only central-authority is established.

3. Business Setting in Ambient Intelligent Markets:

A) Inherent Business Settings:

1. Open-Innovation in developing a product: A product should be designed on smart principles which is highly innovative and contains features which are absent in existing products.

2. Resources for development can be gathered even from competitors: Competitors should be taken into consideration for valuable support and also in few instances order may be placed to gather resource from them. It increases a healthy business rapport with other firms in same business area.

3.Integration of open-standards with company's standards: Open standards can be used by all but a company standard may be limited in use ,so we produce a smart environment the integration of company's standards with open standards is essential.

B) Current Supply Chain Management Standards:

1. Barcodes: This standard-developed from 1940's though laser scanning of the codes in 1960's.It's efficient for product-identification. Currently, we have barcodes which have evolved over Internet across various sectors like healthcare, defence etc.

2. Ubiquitous Services: Ubiquitous devices to provide service channels like mobiles which support standards like 3G, GPRS with which customers can order at whatever location they are and whatever may be the time. The service should be 100% available. Supporting technologies like GPS, biometrics, RFID, cameras, microphones should be the sensors with which smart services can be generated.

C) Business Value of Ubiquitous Computing Technologies:

The main problem faced by companies is information related like product availability, recalls, recycling, and inventory in accuracy etc. The solution is collection of information in initial sales stages & tracking sales records .But integration of the concerned with company's inventory management system become's expensive. Thus, many firms are developed strategies to collect data, process it with low-quality .Statistical data collection method have so far kept the companies in good-state. By using sensors, actuators companies can leverage their savings in cost. Timeliness is crucial in data collection & with help of smart devices, data collection & with help of smart devices, data collection becomes easy.

4. Tracking Customers with Price Discriminators:

With help of ubiquitous computing we can develop a set of relationships for parameters that determine the optimality of the price conditioning solution. The only hindrance is the parameter of loss of privacy. If this factor gains weight customers will shy away from online transactions. But with customers behavior changing with time, most transactions are made hassle free with respect to privacy concerns. So, this factor should not be a major concern while deploying a smart device or smart technology .The merchants can offer discounts in prices for the goods purchased by applying simple

techniques of one click shopping, targeted references to goods etc. The merchants can track customers who are repeated visitors and offer them a flat price discount too.

A store equipped with smart devices may have following tracking technology:

1. Manually registering personal information on wireless card for payment.

2. Automated registration of data with support from digital signature between store's sensors and customers devices.

The current research should be developing pricing model keeping in view the effectiveness of the tracking technology.

Design priorities of ubiquitous retailers:

1. Enhancing consumer value.

2. Elimination of costs that do not add consumer value.

3. Maximise value in supply chain thereby minimizing the inefficiency in supply chain.

Current adversaries in retail sector:

In spite of planned deployment of information systems in logistics, long lead times are frequent. Thus, return rates of business decreases causing the whole supply chain inefficient .Basic reason are information sharing between trading partners in effective, hence accuracy of scheduling of the replenishment process decreases. To overcome this issues ubiquitous retailers are following the vendor managed inventory (VMI) approach .Here, the vendor commands the specificity of delivery channel. Electronic Data Interchange(EDI) is used as a protocol for exchange of business data .In VMI ,there is frequent exchange of information between the inventory levels, so no issues of delayed inventory exists .The manufacturer and retailer interact with each other with EDI standard and retailer. In turn the retailer and wholesaler interact with each other with same guidelines and finally the wholesaler interacts with parties who are interested in buying the smart services.

5. Legal Challenges to Ubiquitous Business:

1. Intellectual Property Rights:

Copyright issues affects usage of organizational assets significantly, so proper legislation should be in place. This ensures that product manufacturing companies do not get into the nerves of services companies. In wireless world, this conflict arises too often there by diluting new projects for ubiquitous commerce.

2. Privacy:

Consumers object if without their consent information about their location, behavior, habits, transactions, finance is communicated to parties in concern. Confidentiality in usage of smart devices should be made indispensible part of ubiquitous business models.

3. Contracts:

There must be certain agreed level of transparency in design principles of ubiquitous business offers like acceptance, rejection, negotiation between the intermediate software agents. Technology neutral legislation should be enforced on practitioners of ubiquitous business organizations. Accordingly, before initiation of a service using a smart device, the consumer must agree on certain terms and conditions for an effective service delivery. Most of the laws were made for pre-ubiquitous business era, so as to achieve the real meaning of ubiquitous business in modern world.

6. Future Directions:

With due regards to the practitioners expertise in managing the risks associated with ubiquitous business ,an effective framework for cost/benefit analysis should be evolved so that the real measure of smart business can be known. Already researchers have done experiments in this regard to measure the effect of using smart technologies with multiple dimensions of data. For example the type of object granularity which is attached to a smart device also affects the overall performance of the smart environment. Adding sensors to data devices makes data collection and management easy .It helps in concluding the effectiveness of the smart business design. Moreover point of creation and point of action   decision makes huge impact on service quality. The future challenge is to establish a clear boundary for both of this so that information flow between these two areas occurs with minimum technological involvement.

7. Conclusion:

This paper presents a novel approach for conducting business in ambient intelligent market. The purpose of this paper is to highlight the business model with its inherent advantage while conducting e-commerce. Additionally we have presented the design principles of a smart business market along with business settings of such a market. Ubiquitous retailers dependencies on standards like Electronic Data Interchange in the Vendor Managed Inventory is also discussed. We have mentioned the legal issues while carrying out business in ambient intelligent market. Finally we want to conclude that in an ambient intelligent business market, ubiquitous devices bridge the gap between information sources which in turn leverage the return on investment for an organization.

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