An Evaluation on the Usage of Intelligent Video Analysis Software for Marketing Strategies

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Extensive Summary

Introduction

As an extension of living structures, companies try to survive and provide sustainable competitive advantage. Technology usage, as one of the most important external dimensions of companies, is a crucial aspect of this aim. This study evaluates the technology usage in companies and makes several suggestions on the usage of intelligent video analysis systems as the adaptation of retail sector to advancing technology. Every year retails incur losses due to some factors such as wrong marketing strategies, wrong store and section designs, wrong staff management, and wrong customer profile identification. There is also a lack of objective data to face with such challenges. One solution to face with these challenges and prevent the losses is to use the video based customer behavior analysis software. In other words, integrating current marketing and selling methods with video analysis technology can provide sustained close tracking and reporting, which in turn increase the managers’ efficient decision making capabilities.

Applications such as store density detection, people counting, age and gender recognition, queue management, product counting, burglary prevention are among the video analysis software for stores. This study evaluates the necessity and applicability of density detection, people counting, and age and gender recognition systems for companies and marketing strategies.

In density detection applications customer routes and the sections they spent more time are identified via videos that are captured from different cameras mounted in the store to acquire the customer density map. People counting systems are developed by the use of image processing techniques to determine the number of people passing from a particular area in a particular time period. Age and gender recognition
applications classify the age and gender of people by making use of face characteristics that are acquired after face recognition.

These software are capable to generate following reports:

**Density Detection Analysis and Reports:**
- Section visit density map
- Product and section interest density map
- Store capacity usage analysis
- Change in density with time
- Number of people passing from a particular point
- Comparison of number of people that are passing by and entering to store
- Personnel management analysis in accordance with store and section density

**People Counting Analysis and Reports:**
- Momentary, hourly, daily, weekly and yearly reports of number of people visit the store.
  - Hourly people density in the store
- Sale turnover values
  - Product turnover values
  - Time analysis of potential/real customer value
- Product manager performance analysis
- The effects of the advertisements and promotions on the number of customers
- The effects of the advertisements and promotions on turnovers
- The effect of special days on number of customers and turnovers
- The effect of weather condition on number of customers and turnovers
- Personnel planning analysis according to people density in the store
- The optimal opening and closing time for the store
- Store maintenance time analysis
- Performance comparison of different stores

**Age and Gender Recognition Analysis and Reports**
- Customer age and gender information
- Customers’ time of interest for products
- Hourly, daily, weekly, and monthly customer profile reports
- Analysis of promotion with respect to customer profile
- Promotion target detection

As a feature study it is necessary to both quantitatively and qualitatively evaluates the benefits of these systems for companies.