



Original article

Alcohol and Tobacco Sales to Underage Buyers in Dutch Supermarkets: Can the Use of Age Verification Systems Increase Seller's Compliance?

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A B S T R A C T

Purpose: Age limits are effective in reducing alcohol- and tobacco-related harm, however, their effectiveness depends on the extent to which they are complied with. This study aimed to investigate the effectiveness of different age verification systems (AVSs) implemented by 400 Dutch supermarkets on requesting a valid age verification (ID) and on sellers' compliance.

Methods: A mixed method design was used. Compliance was measured by 800 alcohol and tobacco purchase attempts by 17-year-old mystery shoppers. To analyze the effectiveness of AVSs, logistic regression analyses were performed. Insight into facilitating and hindering factors in the purchase process was obtained by 13 interviews with supermarket managers.

Results: Only a tendency toward a positive effect of the presence of the keying-on-date-of-birth AVS or ID swiper/checker was found on ID request for both alcohol and tobacco purchase attempts. The use of the keying-on-date-of-birth AVS or ID swiper/checker significantly increased the odds for compliance after an ID was requested, for both alcohol and tobacco purchase attempts. Managers indicated that ID requests and compliance could be facilitated by providing cashiers with sufficient managerial support, technical support, and regular training about the purchase process and use of the AVS.

Conclusions: The usage of AVSs calculating and confirming whether the customer reached the legal purchase age for cashiers significantly increases the odds for cashiers to comply with age limits of alcohol and tobacco. Future research should gain insight into how usage of effective AVSs can be improved and explore the feasibility of implementation and effectiveness in other outlets.

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IMPLICATIONS AND
CONTRIBUTION

The study explores the effectiveness of age verification systems in Dutch supermarkets in a natural setting using a mixed method design. The use of age verification systems to calculate and confirm whether the customer has reached the legal purchase age significantly increases odds of compliance.

It is undisputed that the use of alcohol and tobacco in adolescence is harmful to health [1–7]. The extent to which alcohol and tobacco are available for young people influences the

use and related health impacts (e.g., [1,8,9]). The availability of these products can be reduced by setting age limits [1,8–15]. However, the effectiveness of an age limit also depends on the degree of compliance [1,16].

The implementation of age verification systems (AVSs) could possibly ease the difficulty in age recognition and increase compliance, hence minimizing the availability of alcohol and

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tobacco products for young people. However, little is known about the actual effectiveness of the variety of AVSs used by cashiers in the purchase process of supermarkets. This study investigates the effectiveness of three main AVSs used in Dutch supermarkets in increasing compliance with the alcohol and tobacco age limit.

The Dutch context

In the Netherlands, vendors are by law required to determine the age of potential buyers based on a formal identification document (including date of birth). In the Netherlands, a number of policy changes concerning legal age limits for alcohol and tobacco have been implemented since 2013 in the Dutch Licensing and Catering Act and the Tobacco Act. In January 2013, enforcement for alcohol sale was decentralized to local authorities (municipalities) by national politicians; reasoning that enforcement can be deployed more efficiently and tailored at the local level. Nevertheless, tobacco sales restrictions are still enforced at the national level. In January 2014, the legal age limit for the sale of all alcoholic beverages and tobacco products was increased from 16 to 18 years. In addition, next to vendors selling alcohol or tobacco to underage buyers, also the possession of alcohol in public places (excluding stores where alcohol is sold to consume elsewhere, such as supermarkets), has become punishable by law for persons younger than 18 years [17]. The changes in policy were accompanied by substantial attention in media and politics [18]. These developments may all have contributed to the significant increase in average national compliance rates regarding alcohol sales in on- and off-premise outlets from 28.2% in 2011 to 46.5% in 2013, resulting from two national Dutch mystery shopping studies [18,19]. These two national studies had, to a large extent, comparable methodologies and defined compliance rates as the amount of times the vendor did not sell alcohol to under aged buyers [18,19]. In addition, supermarkets significantly increased in average alcohol compliance rates from 29.6% in 2011 to 55.4% in 2013 [19].

Compliance-enhancing activities and age verification systems used by Dutch supermarkets

From 2012 onward, all supermarket chains affiliated with the Dutch trade organization for supermarket chains and other food services (CBL) agreed in a code of conduct to request a valid and original age verification (ID) for individuals appearing younger than 25 years. In this code, all CBL-affiliated supermarket chains also commit to a four-step systematic approach of age verification in the purchasing process (age estimation, requesting a valid ID up to 25 years, reviewing the ID, and decision to sell) aimed at increasing compliance [20].

In addition, as of 2012, supermarket chains have individually introduced self-regulatory activities, such as using mystery shoppers to monitor compliance and the development and implementation of AVSs, to increase or support cashiers' compliance. Three main types of AVSs have been integrally implemented in Dutch supermarkets. The first one is the pop-up window, a digital window appearing within the cash register screen when an age-related product is scanned, showing the current date minus 18 years. The second one is the keying on date of birth, the cashier must enter the date of birth into the cash register system, which then performs the calculation and indicates whether the product may or may not be sold. The third one is the ID swiper/checker, the

cashier swipes/inserts the ID card through or into a device which then reads the age on the ID. The ID swiper/checker was not developed to verify the authenticity of IDs.

Evaluation of the effectiveness of age verification systems on compliance with age limits

Previous research has shown that requesting ID increases compliance (e.g., [18,19]). However, little is known about the effectiveness of AVSs on cashiers' ID requests and compliance. Krevor et al. [20] investigated the effectiveness of an electronic AVS comparable to the ID swiper/checker, using adult mystery shoppers in the U.S. Although vendors from that study reported that ID swiper/checkers made it easier for them to request customers' IDs, ID swiper/checkers did not increase the actual frequency of age verification. Statements about the effectiveness of ID swiper/checkers on compliance could not be made in the study by Krevor et al. [20] because vendors never needed to stop the sale because they may legally sell alcohol to these adult mystery shoppers.

Another study explored the effectiveness of the ID swiper/checker in Dutch supermarkets, in which the AVS was already implemented (natural setting) [21]. Regarding the 24 purchase attempts of alcohol performed by under aged mystery shoppers who had to show a valid ID when requested by the cashier, it was found that the cashier used the AVS 12 times (50.0%) and complied to the age limit in 11 of these 12 times (91.7%) using the AVS.

Van Hoof et al. [22] explored the effectiveness of a remote AVS by comparing it with traditional age verification by cashiers, using under aged mystery shoppers attempting to purchase tobacco products. They found compliance rates of 96% for the remote AVS compared with 12% for the traditional age verification. Regardless of the evidence for effectiveness of the remote AVS, this system is barely used in supermarkets [23].

The present study

This study evaluates the effectiveness of the presence and use of three AVSs on cashiers' ID requests and compliance with the alcohol and tobacco age limits in Dutch supermarkets. In addition, hindering and facilitating factors of AVSs in the purchase process will be examined. The present study uses a natural setting and therefore only focuses on AVSs that are already implemented and institutionalized in Dutch supermarkets.

Method

This study uses a mixed method design, using quantitative and qualitative data. The quantitative data were obtained using mystery shop research, and the qualitative data were obtained from in-depth interviews with supermarket managers. In addition, field research registered the functionality of various AVSs.

Quantitative research

Population and sampling. Cross-sectional data were collected over a four-week period in the autumn of 2014. All existing supermarket chains in the Netherlands ($n = 19$) were included in our study, accounting for approximately 75% of the total number of supermarkets (chain and nonchain) in the Netherlands. Sampling was stratified by chain, region (the North, East, South, and West of the Netherlands), and population density, assuring a

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