

Product Recalls and Brands: Analysis of Food Product Recall Announcements on Online News Portals

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ABSTRACT

The system of product recalls helps increase consumer safety and is part of responsible manufacturing behaviour. In the case of food products, product recalls are announced on NÉBIH's (National Food Chain Safety Office) homepage, but to reach more customers, daily news and online news portals are also important sources of this information. However, news portals sometimes create exaggerated headlines or doesn't mention the exact brand name, so it can frighten consumers unnecessarily, as well as can harm the image of other producers (halo-effect). For the research we selected all food product recall announcements on the homepage of NÉBIH in the period of March-September 2023. We examined how these recalls were communicated on the online portals having the highest reach, focusing on transparency - especially in terms of comprehensiveness and correctness (regarding the brand name). The news' headlines have been categorized based on the mention of brand name in the headline and a quantitative analysis explored the performance of the online news portals. We found that comprehensiveness is relatively high, however, correctness in headlines is quite low, therefore there is high potential for negative spillover effect. Another important finding is that correctness does not correlate with comprehensiveness. We found different patterns for producer and private label brands.

Keywords: product recall, online media, negative spillover effect

1. Introduction

According to the saying, 'The only man who makes no mistakes is the man who never does anything.' When this concept is applied to companies, it is evident that mistakes can occur in their operations. While process and quality management aim to reduce the likelihood of failure, there are situations where a product may not meet expectations but still launched. If the issue is detected before selling the product, it is identified as waste. However, if the product has already been sold, it can pose a significant risk to consumers, potentially causing physical harm and leading to consumer loss, trust loss, and reputational damage. As a result, an efficient product recall is essential to mitigate these adverse effects.

Product recall is 'any measure aimed at achieving the return of dangerous product that is already in the hands of consumers or other end users' (EC CASP 2020:3). A product recall can

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be voluntary or mandatory. Product recall must be distinguished from product withdrawal, which ‘shall mean any measure aimed at preventing the distribution, display and offer of a product dangerous to the consumer’ (EC Directive 2001/95/EC on General Product Safety).

While in 2018 there was no detailed, practical legal regulation available for companies concerning withdrawal and recall in Hungary (Barna et al, 2018), in 2020 the European Commission and European Market Surveillance Authorities have developed a working document on guidelines for recall process as part of the mission to improve product safety in the European Union (EC CASP 2020).

2. Literature review

The history of research on product recalls dates back to the rise of consumer market influence and awareness, as well as the introduction of market regulations in this field. This encompasses prior research conducted in both the US and Western European nations, such as Mowen (1979) and Jolly & Mowen (1985), as well as more recent studies in Hungary by Fazekas (1995), Kasza et al. (2012), and Barna et al. (2018). In the MTMT (Hungarian Scientific Works Repository) database, only four articles are found that explore recall or product recall through keyword search results. However, none of these articles specifically address the marketing impact of product recalls, including the communication of recalls and the potential halo effect. Hajnal and colleagues (2004) addressed the technical aspect of food recall tracing, while Kasza et al. (2012) provided an overview of product safety issues and their potential solutions. Barna et al. (2018) and Szakos et al. were also consulted. In 2018, the findings from a representative consumer survey conducted by the NÉBIH (National Food Chain Safety Office in Hungary) on product recall were released. This study provides valuable insights into consumer attitudes and behavior towards recalls, as well as their ability to remember specific details such as the reason for the recall and the types of products affected.

Concerning the product types which have already been in the focus of recall studies, some product categories are overrepresented in the literature. In the international literature, significant part of the articles deals with challenges of automobile recall (Wei et al. 2019; Giannetti & Srinivasan 2021), in which the Volkswagen scandal was one of the most studied one (Majláth 2016). Another group of articles deal with different product categories at the same time (Cleeren et al. 2013; Kübler & Albers 2012), and several studies focus on the food industry (Kong et al. 2019; Liao et al. 2020; Chowdhury et al. 2021; Yu et al. 2023). Supplementing the latter with the fact that in Hungary NÉBIH publishes food recalls on a regular basis and comprehensively, this article concentrates on food recalls in Hungary.

Cleeren et al. (2013) claim that product recalls could decrease not only the market share of the recalled product, but the sales of brands in the same category because of the negative spillover effect. Food product recalls can decrease consumers’ trust in safety systems (Liao et al. 2020) and can negatively affecting competing brands in the same product category (Zhang & Lim 2021).

Borah & Tellis (2016) examined automobile recalls and their potential negative effects on other car brands. They defined “perverse halo” (or negative spillover) “as the phenomenon whereby

negative chatter about one nameplate increases negative chatter for another nameplate”. They found strong evidence for such a negative spillover effect, which exists not only for some brands across segments, but also across brands within the same segments. However, they underlined that this effect is stronger if the recalled brand is a dominant brand on the market, and weaker if the recalled brand is a less dominant brand (Borah & Tellis 2016).

Contrary to the above-mentioned studies, there can be a positive approach of halo-effect related to recalls. Byun and co-authors (2020) examined the loyalty-halo effects of recalls at six grocery chains in US in two dimensions: whether consumers stay at or leave the grocery store after the recall and if they stay, how long is the delay of repurchasing the recalled brand-based on the data of a reward card program. Their definition of a loyalty halo is “a phenomenon where the halo effects of loyalty make customers resilient to negativity”. They found that the consumers who were very loyal before the product recall, typically stayed with the recalled brand, however customers with strong shopping habits were less likely to stay with the affected brand, so this phenomenon will create a positive outcome for competing brands.

Giannetti and Srinivasan (2021) also highlighted both positive and negative spillover effects of product recalls at brand, firm and country-level. Using the robust sample from the automotive industry, their finding strengthened previous results that non-recalled products at brand level can suffer after a recall. Liu et al (2021) also examined the spillover effect of product recalls on competitors’ market value.

However, these negative or positive spillover effects can come into operation only if the recall information could reach the consumers. Therefore, effective communication of the recall has high importance. The European Commission recall guidelines contain suggestions both for recall notice content and recall communication platforms. An effective recall notice should: (1) be eye-catching, (2) be available on the official language of the country, (3) be easy-to-understand, (4) have clear heading, (5) provide relevant product identification information, (6) should mentioning hazard, (7) give instructions what to do (8) provide details about the remedy (9) and provide contact details (EC CASP, 2020). Information on product recall should be spread fast and effectively in order to prevent any harm for the consumers, therefore the EC document recommends several communication paths: (1) direct contact of the consumers via email, telephone call, text message, (2) company’s communication platforms like homepage, newsletters, firm’s social media platforms (3) communication channel of national MSA – like NÉBIH (4) traditional media – newspapers, radio, TV, (4) in-store communication (5) specialist media. Beside these forms, word-of-mouth communication can improve the reach of potential consumers affected by the potential risk. (EC CASP, 2020)

3. Methodology

The aim of this research is to examine product recall announcements on online portals with the highest reach from two dimensions: (1) how comprehensive the announcements of food recalls on the given online news portals and (2) how much these news headlines help consumers to identify the exact brand in order to prevent negative spillover effect.

Comprehensiveness is important because online news portals have 5.6 million users spent and they spend by far the longest time reading news sites (3 hours 42 minutes average – in a 3-month period) (NMHH, 2023). Online news portals – by definition – should share the most relevant and up-to-date news with their audience in an understandable and correct form. That is why their readers visit their page. Their advantages over traditional newspapers are their promptness: they can publish news in 24 hours a day and the other advantage is their closeness and convenience: as a mobile phone makes it possible to reach new information at any place and at any time of the day. Hence, if the aim is to inform as many people as possible and as soon as possible on a food product recall, it is worth communicating this recall on online news platforms. We decided to measure comprehensiveness by the percentage of food product recalls published on the online platforms in a given period. Therefore, values can vary between 0-100%, where 0% means, that a given online platform did not published any food product recall news, and 100 % means that all product recalls at NÉBIH site were communicated on the given news site. Of course, the higher values are better, but we should expect 100 % as the ideal value, because (1) information on recent food product recalls are freely available at NÉBIH's homepage, so the cost of accessing information is very low and (2) because the topic of this news is a kind of danger, it fits quite well with the general profile of news sites, which prioritize negative news over positive ones – but this time it coincides with the social interest.

The purpose of this study is to evaluate the product recall notifications published on online news platforms (1) in terms of their comprehensiveness, and (2) how well the accompanying headlines assist consumers in recognising the exact brand in order to avoid any adverse consequences. Comprehensiveness is crucial as online news portals have 5.6 million users who spend the longest time reading news websites (3 hours 42 minutes average in a 3-month period) as reported by NMHH in 2023.

Correspondingly, online news portals should provide the most pertinent and current news to their audience in a clear and precise manner, which is why their readers visit their platform. The advantages of online news platforms over traditional newspapers lie in their promptness – they can publish news 24 hours a day. Additionally, they offer convenience and accessibility, as mobile phones allow for access to new information at any time and place. Therefore, in the case of a food product recall, dissemination of the news on online news platforms is worth considering in order to reach as many people as quickly as possible. Comprehensiveness was measured by the proportion of food product recalls reported on online news platforms within a given time frame, with values ranging between 0-100%. A 0% result indicates that a particular online platform did not report any food product recalls, whereas a 100% result denotes that all product recalls from NÉBIH site were communicated on that news platform. While higher values are preferable, it is reasonable to anticipate 100% as the optimum value. This is due to the fact that recent food product recall information is readily accessible on NÉBIH's homepage, resulting in a low information access cost.

The other dimension we examine is correctness of these news headlines. Correctness here is focusing on the mention of a recalled brand's name in the headlines. Reasoning that kind of approach is twofold: (1) news headlines are for highlight the main content and give a glimpse on what is the news about and (2) to avoid the potential negative spillover effect to other

competing brands, it is clear that the brand name of the recalled brand should be mentioned. Even if the brand name mention, we still can experience other form of negative spillover effect as other product segments under the same umbrella brand may suffer from a recall of one kind of product.

Nowadays manufacture brands and private labels are both successful in the food trade. According to NÉBIH, there is a significant emphasis on the production and distribution of commercial private label products currently. This is because more and more consumers are opting for these instead of branded products with comparable quality attributes but at a higher cost. It is worth noting that private-label products, priced more competitively, do not necessarily signify inferior quality. No further laws apply to the food manufacturer who produces their own branded product, whilst the supervisory aspects, control mechanisms and procedural methods of the food inspection authority remain unaltered (Köpöncei, 2022).

In case of private-label brands, the brand communication is not so strong, but customers may know which retailer the brand belongs to. So, in case of private-label products, we considered to accept mentioning the retailer's name instead of the concrete private-label name in news headlines. It can also be supported with the fact that the potentially recalled private-label product cannot be purchased in other stores but only in the given retailer's shops.

Sample selection was created as follows: on NÉBIH's webpage the product recall announcements can be traced back only for a 6-7-month period. Therefore, we could analyse food product recalls within the period of March-September 2023. In this period, 27 food product recall cases have been registered at NEBIH's webpage. (see Table 1)

The next step was the selection of online portals on which we could search for news related to these product recalls. For this selection, we used the Q1 2023 report of the National Media and Info-communications Authority (NMHH). According to their report, 77.41% of the 15+ years old Hungarian population used internet in the first quarter of 2023.

The Hungarian online portals with highest reach are 24.hu, blikk.hu, origo.hu, index.hu, femina.hu, nlc.hu, ripost.hu, borsonline.hu, mindmegette.hu, and nosalty.hu. Two out of this TOP 10 (mindmegette.hu and nosalty.hu) were not included in this research as their main profile is to create recipe-collection.

Table 1: Food product recall announcements within the period of March-September 2023 at NÉBIH homepage

Date	Product	Reason of recall	Brand type*
21. 09.	Yi Yuan Sesame oil from black sesame seeds (100% Pure Black Sesame Oil)	high mineral oil content	1
06. 09.	Coop – Good for me! puffed rice slice, salty, seeded, 100 g/ natural, 100 g/ salty, 100 g	possible presence of cadmium content above the limit value	2
06. 09.	ENJOY IT FOR FREE! Puffed rice slice, natural, 100 g / salty, 100 g	possible presence of cadmium content above the limit value	2
24. 08.	Bertolli Pesto Calabrese sauce with red pepper, ricotta and extra virgin olive oil, 185 g	not labelled mustard allergen	1
09. 08.	SPAR NATUR PUR Organic couscous, 500g	sensory inadequacy (rotten smell)	2
04. 08.	dmBio raspberry puffed rice discs, from 8 months, 35 g	possible occurrence of aflatoxin content above the limit value	2
11. 07	FREE Chocolate-flavoured gluten-free extruded cereal, 300 g	non-labelled soy allergen	2
06. 07	Dárdás Boiled, smoked, quick-marinated Caesar bacon, 300 g	not a designated soy allergen	2
22. 06	7 Days Croissant strawberry 60 g/strawberry	not labelled peanut and milk allergen	1
21. 06	Flavoured, roasted corn kernels – several types (Mexicorn-Mogyi, Spar p.l. and Penny p.l.)	possible occurrence of aflatoxin content above the limit value	1/2
08. 06	Poultry sticks 1000 g (Kokárdás)	possible presence of Listeria monocytogenes	2
01. 06	Sonday Corn plate amaranth 105 g and Sonday Corn plate chia 105 g	non-approved pesticide residue (chlorpyrifos)	2
25. 05	ARDO Wok Mix 2.5 kg, 1 kg	possible presence of poisonous plant parts (potato berry fruit).	1
20. 05	Nutriversum - Vegan Protein PEA and RICE - in several flavours	non-labelled soy allergen	1
09. 05	Karát crispy pork hot dogs, 1000 g	non-labelled soy allergen	2
04. 05	SPAR FREE FROM gluten-free plate with caraway seeds, 100 g / with cheese, 100 g	gluten content not indicated	2
04. 05	Ziegler Gluten-free plate with cheese, 100 g	gluten content not indicated	1
04. 05	Delicacy double sausage, 250 g and Paprika, spicy double sausage, 250 g	possible presence of Salmonella	2
27. 04	Bergland Gluten-free plate with cumin seeds 100 g /with shallots 100 g	gluten content not indicated	1
12. 04	S-Budget "A" quality long grain rice, 1 kg	sensory inadequacy (insect contamination)	2
03. 04	Cachet Almond 72% Cacao Extra dark chocolate, 100 g/ Almond dark chocolate with 72% cocoa, 100 g	aflatoxin content above the limit value	1

29. 03	Szatmár bitter liqueur alc. 37.5%, 0.04 l/ Szatmár bitter liqueur alc. 34.5%, 0.7 l	beta-azarone content above the limit value	1
28. 03	Snack Day Gluten-free plate with cheese, 100 g/ with shallot, 100 g	gluten content not indicated	2
24. 03	dmBio sesame tahini cream, 250 g	possible presence of Salmonella	2
21. 03	Danone OIKOS Greek live flora blueberry cheesecake flavoured yogurt, 4 x 125 g	possible presence of mould	1
17. 03	Bauk Hof organic teff flour, whole grain 400 g	high tropane alkaloid contamination	1
09. 03	ABC Fruit Jelly Straws 260 g, ABC Fruit Jelly Straws 1000 g (Jelly Tubes with Fruit Flavour)	possible suffocation risk due to additives not permitted	1

*own addition: Brand type: 1- manufacturer brand, 2-private label

Source: <https://portal.nebih.gov.hu/termekviszahivas> accessed: 1 October 2023

Femina.hu was not included, either, as Femina is not a classical news portal but the market leader in the segment of online women's magazines, but it has a direct link to index.hu and index.hu portal shows the leading posts of femina.hu too.

The remained 7 portals can be divided into classical news portals (24.hu, origo.hu, index.hu), tabloid portals (ripost.hu, borsonline.hu) and the mixture of classical and entertainment style, called infotainment (blikk.hu), and there is one portal explicitly dedicated to women (nlc.hu). Although this site is not a typical news site either, but it has an “Aktuális” (current) subpage which publishes the latest news. Final selection of news portals in this study can be seen in Table 2 with data of real users and popularity.

After identifying the list of online portals chosen for the study, we collected the news related to the 27 product recall announcements presented in Table 1. For that we used both search option on the news portals and Google search, if we could not find the article directly on the news portal. Altogether there was a potential for $7 \times 27 = 189$ news items. Then, we collected each news headlines and evaluate them according to their correctness: whether the brand names (or in case of private label products at least the retailer's name) were mentioned in the news headlines or not.

Table 2: Description of online portals selected for the study

Online portal's name	Real users of Hungarian online websites with highest reach in the first quarter of 2023 (15+ domestic) (person)	Average time spent (ATS) in Q1 2023 (hour : min.: sec.)	The popularity rank of the top ten websites in gender groups	
			among men (rank)	among women (rank)
24.hu	4 674 932	0:26:06	1	3
blikk.hu	4 570 824	0:23:29	4	1
origo.hu	4 501 056	0:33:08	3	4
index.hu	4 449 240	1:03:43	2	6
nlc.hu	3 803 376	0:11:37	-	8
ripost.hu	3 710 012	0:07:02	9	10
borsonline.hu	3 643 100	0:09:30	-	-

Source: NMHH, (2023), author's own compilation

4. Results

As was mentioned above, altogether there was a potential for $7 \times 27 = 189$ food recall news items in the examined period, but our search has resulted in 149 items. This proportion of 78.83% has already shown that there is no total comprehensiveness in communicating food recall announcements on the most visited online platforms.

Comprehensiveness shows relatively narrow range of proportions from 51.8% to 100 %, but the 78.83% average suggests that majority of the most visited online sites regularly post on food product recalls. It can be quite conforming for blikk.hu and index.hu visitors that these two news portals report on each and every food recall (100%), so readers do not have to fear that a possibly important piece of news on the subject will not reach them. However, it is quite surprising, that 2 out of the 3 traditional online news portals perform lower proportions (77.8% and 88.9%). At the 24.hu portal recall news in May and June were published incompletely, but between July-September they urged their readers without exception. At origo.hu portal they have not informed visitors in connection with the jelly straw, a gluten-free product and a vegan protein recalls. Table 3 summarizes these results.

Nlc.hu has been one of Hungary's largest and most popular women's internet portals since its launch in 2001, both on the web and on mobile. It informs and entertains the widest possible groups on the most important topics affecting women, with diverse content and numerous services². Although they publish actual news on politics, economics and the like, this portal still has strong magazine-style. Therefore, it is not surprising, that only 62.9 % of the food recalls have been published here. On the other hand, we must emphasize that in the Hungarian society, still women are those who are responsible for majority of food purchase and cooking

² <https://sales.centralmediacsopot.hu/termekportfolio/online/noi-eletmod/nlc/>

at home, therefore they are the most important target group for food recall announcements. The lowest proportion of published food recall news (51.8%) was detected at borsonline.hu, what functions as a tabloid portal.

Table 3: Comprehensiveness and correctness of food product recall news’ headlines on selected online portals

Online portal type	Online portals	Transparent Communication Measures	
		Comprehensiveness Proportion of total food recalls published on the news portal (%)	Correctness Proportion of mentioning brand/retailer name in news headlines on recall (%)
news portals	24.hu	77.8	57.1
	origo.hu	88.9	45.8
	index.hu	100	37.4
infotainment news portal for women	blikk.hu	100	40.7
	nlc.hu	62.9	58.8
tabloid news portals	ripost.hu	70.3	5.2
	borsonline.hu	51.8	21.4

Source: Author’s own editing

Correctness measurement was calculated by the proportion of headlines mentioning the brand name of the recalled product among recall news published at the given site in a given period. Therefore, it may happen that a portal reports only a few recalls but if the product brand name was mentioned in all the headlines, then Correctness value can be 100%.

13 out of the 27 food recall cases in our study affected manufacturer brands and 14 cases represented private label products. (In one case both were affected as the manufacturer, Mogyi Kft. sells its own brand but, at the same time, it produces private label products to retailers.) In cases where private label brands were recalled, we accepted both the brand name and the retailer’s name in the headline, as to some extent it makes possible the identification of the product.

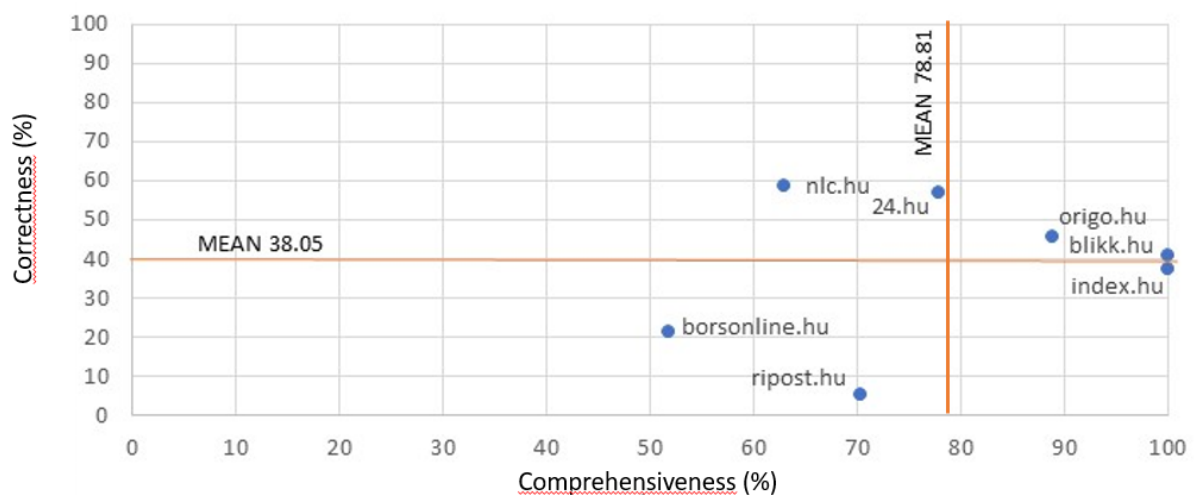
Recall news’ headlines show wide range of incorrectness. Some of the headlines just mention the fact of the product recall but gives no closer indication what the subject of the threat is e.g.: ‘This product was immediately recalled by NÉBIH, do not consume it if you have also bought it’ (blikk.hu). Other headlines contain narrower or broader product categories but do not mention the exact brand name: e.g. ‘Have you bought this popular cereal? Take it back immediately, it's dangerous!’ (borsonline.hu). Another type of headline focuses on the problem, the reason of the recall but makes it no easy to find out, which is the exact product which is affected by the recall. e.g. ‘There was gluten in the gluten-free snacks, snacks were recalled’ (nlc.hu). Headlines like this: ‘Attention! Products said to be gluten-free were recalled because they contained gluten: we show you which ones they are’ (blikk.hu) – obviously want to increase the number of clicks, as readers must open the article to know which products are

affected. Chakraborty et al. (2016) argue that clickbait activity based on loud, exaggerated headlines can increase number of clicks on the short-term, but on the long-term, these headlines increase expectations and may result in disappointment for the readers.

Correctness values show high range among the selected online portals: from 5.2 to 58.8%. Highest correctness values were calculated for 24.hu and nlc.hu, but even these relatively high proportions mean that more than 2 out of 5 recalls the headlines did not mention the recalled brand's name. That means that (1) vague headlines are used for clickbait activity and (2) there is a strong basis for negative spillover effect for competing brands in the same product category of the recalled product. Not surprisingly, the two tabloid portals show the lowest percentage of correct headlines. Ripost.hu online portal shows 5.2% of correctness in the headlines concerning the mention of the exact product brand name and borsonline.hu gives correct headlines in just 1 out of 5 occasions (21.7%).

Negative spillover effects can occur when the brand or retailer's name, or the product category, is not mentioned in the news headline. If a product category is mentioned, but the exact brand or retailer's name is not, this can negatively impact sales for competing brands as consumers are unsure from the headline which brand is affected by the recall caused by a problem. Of course, both scenarios could also augment the readership of the news article if individuals are interested in gaining a comprehensive understanding of the matter.

Figure 1: Position of online portals based on food recall news headlines' comprehensiveness (%) and correctness (%) (based on news' headlines on food recall March-September 2023)



Source: Author's own edition

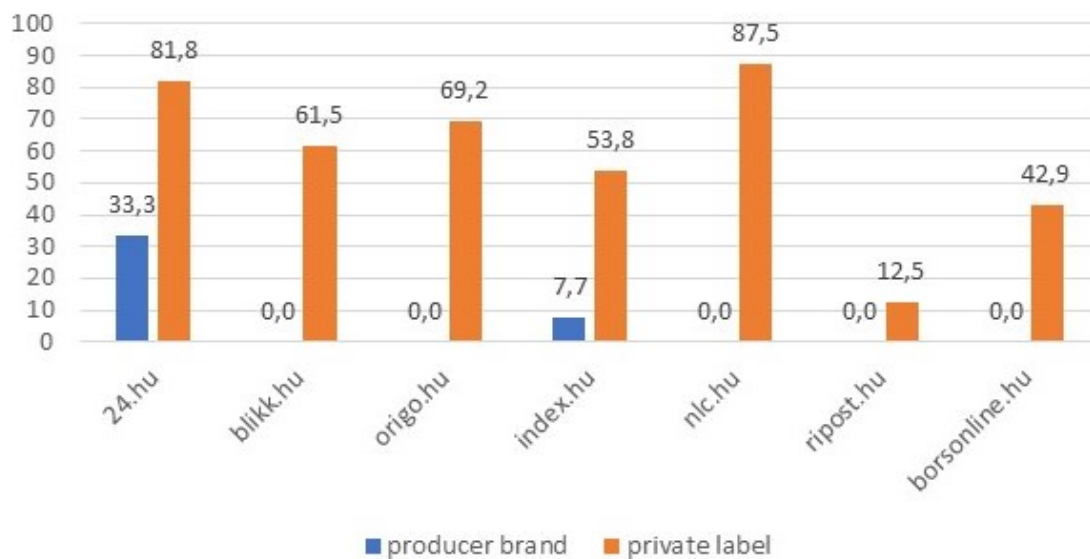
To present the findings, we have organised online portals in a coordinate system, with the axes of correctness (vertical) and comprehensiveness (horizontal) in Figure 1. Drawing the means of these measures in the figure, they divide the online portals into three groups: borsonline.hu and ripost.hu belongs to a quarter with relatively low comprehensiveness and low correctness; in the upper-right corner we found online portals with average level of correctness but very high comprehensiveness with blikk.hu, origo.hu and index.hu; while nlc.hu and 24.hu belongs

to the top-left area, in which comprehensiveness is below the average level, but correctness is the highest among the examined portals.

After categorising the sample by brand type, notable disparities have been identified. In our sample, 13 recall was related to manufacturer brands and in 14 cases the recalled products were a private label. Only a small number of headlines (4 out of 70) referenced manufacturer brands, while 58.9% of the headlines reporting on recalled private label products mentioned the retailers behind them. However, the latter category mentioned the exact private label brand name just in one case (Dárdás brand at Penny). (See Figure 2.) Tabloid portals (ripost.hu and borsonline.hu) shows the lowest proportions.

The findings imply that a greater negative spillover effect of recall could transpire with regard to private label products, as non-engaged readers who do not click through to further recall details may only retain that the retailer's products were hazardous without knowing which specific item was affected. In this instance, the adverse impact – for example, a lack of confidence – can affect other own brand items from the specific retailer, rather than the brands of their competitors.

Figure 2: Proportion (%) of food recall news' headlines mentioning the brand/retailer name



Source: Author's own edition

5. Discussion and Conclusion

Food product recalls mean potential risk for consumers, so it is absolutely justified to communicate this important news for the public. As indicated in the European Commission's document, there are many other communication channels available for the publication of product recall notices besides news sites. NÉBIH also provide press releases and it operates a Facebook page from which these alerts can be easily get and further communicated to

customers. Responsible news portals should publish all product recall announcements as people visit these pages because they want to be well-informed.

In the analysis, we wanted to know (1) to what extent the information-giving on food recalls is comprehensive on the most visited online portals, and we examined that by the percentage of the food product recalls published on the online sites (called comprehensiveness). The other aspect we examined was that (2) what percent of news' headlines mentioned the given recalled brand name or at least the retailer's name, as it can be informative for private label brands (called correctness).

We found that the examined online portals regularly report on food product recalls. The relatively high mean of proportion of reported cases is not surprising as food recall is a negative news and therefore there is higher probability to be published by a news site and get higher number of clicks. People are more open to negative news as it may help them to avoid a bad situation or to make a bad decision. In connection with food recalls, the aim is the same: to avoid consuming the food product which may cause problems. The typical online news portals showed higher comprehensiveness than tabloid portals and nlc.hu which has a rather magazine style.

Fortunately, those online news portals which publish the fullest list of food recalls has very high popularity among both gender groups: index.hu is the second among men and blikk.hu is the first most popular website among women. However, as cross-reading among websites with the five highest reach is quite high – more than 80% (NMHH 2023), the chance of reading at least one headline which reports on a given product recall is high either.

In connection with correctness in recall news' headlines the picture is more fragmented. Most headlines do not mention the recalled brand's name, and of course, this deliberately incomplete information would basically encourage the reader to click on the news. However, if this does not happen the reader "remains in the dark" and so, the news cannot prevent the consumption of a potentially dangerous product. People expect that headlines are for summarizing the main message of an article/news and not creating vague information just for clickbait. Nlc.hu and 24.hu created the clearest headlines with over 50% of mentioning the brand names in the headlines. Index.hu and blikk.hu is in the middle ground with close to the average 38.05% proportion of headlines containing brand names. These results are in line with Garcia Orosa et al. (2017)'s findings, that clickbait is more and more typical among online news portals in the EU – from Hungary, especially blikk.hu was criticized in their study.

At ripost.hu we found very low correctness in headlines – which is not very surprising if we consider its tabloid feature. However, not only the 5.2% of correctness has very bad message, but if we analyse it together with the 70.3% of comprehensiveness rate. Headlines at ripost.hu are very manipulative: 'Do not eat from it if you bought one in the store! Immediately recalled by NÉBIH' or 'If you buy this cake, do not eat it!'. These types of headlines are manipulative in three ways: (1) they do not mention the exact product category, (2) they do not mention the exact brand or retailer name (3) they use exclamation mark, which creates the feeling in the reader that it is an urgent and imperious news. If the topic is a type of danger, this kind of punctuation may be acceptable, but without providing the most important information on the

case – namely the product category or brand name – it is just for the effect and for higher number of clicks. However, in these cases we cannot speak about negative spillover effect because these headlines are too vague to create concrete association in the head of the reader. The study results indicate that private label food products might experience a more significant negative spillover effect compared to manufacturer brands. This is because news headlines commonly mention the retailers' name, leading to a higher frequency of associations with food product recalls.

Examining comprehensiveness and correctness at the same time – with the location of the points represented the portals in Figure 1 – draws attention to the fact that comprehensiveness and correctness have no correlation. It means, if the alert is regularly published on the news portal, that does not mean automatically that the headline mentions all relevant information regarding the recall. There were two online portals which publish all food product recalls (index.hu and blikk.hu), however, correctness rate is just above the (relatively low) average. The other portals in this study showed deficiencies in both completeness and correctness. which could potentially lead to negative spillover effects. It is evident that the adverse impact on brands and companies that were not responsible for the recall but are still linked to it leads to increased social costs for society. To mitigate these costs, news portals ought to provide transparent information to their readers, including in their headlines. This study reveals that progress remains to be made in this realm.

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