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Purchasing attitudes for agro-food products and changing financial status during Covid-19 outbreak in Turkey

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Abstract

The COVID-19 pandemic, which was underestimated at the beginning, had become worldwide in 2020 and affected lives in a devastating way. Thus, it turned out to be the new corner point for the era we live in. Many challenges have become visible due to replicated or prolonged social distancing measures or lock-downs within 2020. Due to periodic medical information, many people changed their preferences from a consumption point o f view and reducing physical activities have been a factor affecting the change. In this study, 499 individuals were surveyed online in July 2020 in Turkey to determine the change in their consumption preferences within the pandemic process. The linear relationship between changing amounts of fresh fruits and vegetables (FFVs) and animal products purchased and household income were compared due to COVID-19 encounter. The results indicated that not the level of income but the declination in income affected purchases and consumption of all varieties. Besides, the share of the budget allocated to FFVs and meat and dairy products were assessed as well in relation to amounts consumed. Herewith, the amount of meat and dairy products purchased and consumed by the audience were found to be related to the budget allocated.

Keywords: purchasing, preference, COVID-19, income, FFVs, meat, dairies, Turkey

JEL Codes: C12, D12, E21

Introduction

Adaptation to changing circumstances is hard in terms of lifestyles. However, some situations enforce masses to change the way that they live. The unexpected and extremely contagious novel Coronavirus (SARS-COV 2 or COVID -19) has been in effect around the world since the beginning of 2020 (Cranfield, 2020). It has been 1,5 years and the disease has not been taken under control. It was understood by the mid of 2020, short after its announcement as a pandemic by the WHO, that its effects will be persistent as it is today. In addition to mass losses and socio-economic devastation, the pandemic has been changing lifestyles specifically of the middle class and above around the world (Rizoua et al., 2020). The change in way of living due to COVID-19 and its economic effects have become similar when compared with to previous epidemics (Ceylan et al., 2020). The evolution is not limited with lock-downs, social contraction, inbound and outbound travel restrictions. Economic downsizing is related to these unfortunate challenges as well (Gornicka et al., 2020; Sidor and Rzymski, 2020). Many productive sectors, as well as services that highly incorporate youth labour, have been depressed in supply and demand terms.

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Generally, when supply and demand dynamics are considered due to changing circumstances, daily consumption mainly referring to compulsory food and agricultural products are kept apart. The reasoning behind is related to importance of nutrition demand of the society (Ceylan et al., 2021; Goddard, 2020). However, under limited social contact conditions of the COVID-19 era, reaching products that are essential has also become harder everywhere. The lock-downs and at least temporary unemployment lead rising budgetary concerns and shift to diets that include more carbohydrates, as it has been the case in Mexico (Espinoza-Ortega et al., 2021). In addition to the hardship in reaching the products, the demand structure has been changing drastically.

One of the observations on changing consumption attitudes is rising online shopping tendency (Goddard, 2020; Wilson, 2020). While online shopping was around 8 % across Canada in 2018 (Brown, 2018), the share has risen to 15 % by the mid of 2020 (Goddard, 2020). Prior to this pandemic, there has been a rising tendency for online purchases of durable products or online orders of ready food via specific delivery sites in many countries. This sort of purchasing schemes has become widespread in Turkey as well. However, as a challenge online supermarket and even grocery purchases became an alternative for consumers having specifically moderate or higher income levels within the pandemic process.

However, not only the purchasing attitudes, but also amounts of products demanded and purchased have changed in all product lines. As an instance, calorie intake has become a concern for Polish consumers within the lock-down process. While 43 % of more than 2.000 survey attendants declared they reduced physical activity, 34 % said that their food consumption have risen (Gornicka et al., 2020). The demands for groceries, meat and dairies, packed products have been affected within the process. The change was both related to changing or varying income and affected by socio-economic characteristics of the society almost everywhere in the world. However, it was intended within this study to measure the changing shopping or purchasing attitudes and demand structures of individuals in Turkey. A randomly selected sample of 499 individuals was surveyed online and the findings were evaluated due to the level of association between changing demand and socio-demographic characteristics of the audience within the COVID-19 process. The main target was to measure and evaluate changing demand patterns referring to 2020 conditions and assess contemporary reflections to the market.

Material and Method

The main objective was to evaluate linear correlation and association between indicators demonstrating the features of the audience and their changing purchasing and consumption attitudes. Chi-Square testing was used to measure the differences between observed and expected values of specific datasets and detect the linear association between discrete or categorised variables. Pearson's Chi-Square statistic tests independence of referred criteria (H_0) against their dependence to each other (H_A). Therefore, utilising this test for 499 observations via SPSS statistical package, the following association hypotheses were tested.

- There is no relationship between level of income & Changing amounts of FFVs and meat/dairy products purchased/consumed
- There is no relationship between reduction of income & Changing amounts of FFVs and meat/dairy products purchased/consumed
- There is no relationship between changing amount spent for FFVs purchases & Changing amounts of FFVs purchased/consumed
- There is no relationship between changing amount spent for animal products & Changing amounts meat/dairy products purchased/consumed

These are the main hypotheses set forward. However, the analyses incorporated additional categorised variables depending on the nature of the relationship.

Results

Socio – Demographic Outlay

Prior to assessment of the linear association between variables, it is beneficial to provide some information on socio-demographic features of the random sample surveyed online. 60 % of the sample was composed of female correspondents (301) and 40 % was male (198). The average age of the participants was 39. This age figure infers information on adaptability of participants both to conventional and modern marketing approaches and tools. To be more precise, almost all individuals are experienced in face to face shopping in markets and relevant stores. However, they are also used to maintain purchases online as they have adapted to changing marketing tools.

Keeping in mind that the survey was implemented online, some findings as level of education or employment status might not be reflecting the overall characteristics of the society. This is due to the eligibility of attendee to undertake the online survey and his/her confidence to share the relevant personal data. As an instance, the sample was composed of highly educated individuals. 84,33 % of the sample seemed to have tertiary and above degrees, of which 54 % were Bachelor's graduates. Besides, 60,12 % (300) of the audience was employed on full time basis. There were also people holding part-time jobs and some were non-employed or student. The sample seemed to demonstrate average characteristics for a consumption study.

In addition, level of income, experienced change or variance in income, and employment status of the participant should be indicated in order to enable accurate assessment in the scope of a correlation analysis. The aggregate income distribution was demonstrated in Table 1. As it can be said, almost 90 % of the audience seemed to receive income above minimum wage

depending on 2020 figures[1]. Considering the average per capita income of $ 716,58 (Anonymous, 2021), the relatively well paid sample was also the reflection of online reach to an educated audience. More than 70 % of the audience seemed to have more than $ 640. Yet, this figure represented household income.

Table 1. Distribution of Household Income

Level of Income	Number of people	%
Below minimum wage	21	4,21
Minimum wage	29	5,81
$ 326,99 - $ 639,78	95	19,04
$ 639,79 - $ 924,12	92	18,44
Above $ 924,12	262	52,51
Total	**499**	**100**

A socio-economic factor that would be related to changing purchasing and consumption preferences was the employment status. There have been people in the sample that at least partly lost their jobs/salaries. The total number of unemployed due to the pandemic was 75 and 40 individuals out of these people were still unemployed at the time of the survey. Considering the financial situation experienced during this unemployment phase, 60 people declared that they did not receive unemployment or compensation wage. The number of survey participants was 6 that declared receipt of salary at most for 3 months. They also indicated that the salary was cut afterwards. Besides, the variation in the household income was also significant. Among these 75 unemployed individuals, 53 declared more than $ 142,17 (1.000 TL) monthly income loss and only 9 of these confirmed no change in the income.

The survey participants were asked to indicate their average monthly spending on agro-food products and meat/dairy products to understand their average preferences and consumption tendencies. The average financial allotments of individuals appeared as $ 238,14 for agricultural and food products and as $ 102,22 for animal products. However, there has been reduction and variation in these rates within the COVID-19 process as well. This also affected the purchasing and consumption attitudes.

The changing attitudes can be evaluated from shopping venues preferred within the pandemic process. Most of the society, loosely related to the place of inhabitancy, generally prefers to shop on district markets of groceries to buy FFVs. However, the declination in this preference is significant among the sample. As an instance, 29 % of the audience declared that they have stopped to visit district markets and 36 % said that they stopped to visit green grocers. However, this can only be valued after overviewing the changing situation with regards to online shopping preferences. While 73 % of the audience (365 households) declared no online shopping experience for agro-food products before the pandemic, the share of this group reduced to 58 % (290 households). When read inversely, 42 % (209 households) of the audience seemed to foster online agro-food purchases. Accompanied with total 305 online shoppers (61 %), it can be said that number of people giving online orders within the process has demonstrated a rising tendency for FFVs and durable products.

Test Results for Association of Variables

The linear association between variables were tested with X^2 – Chi Square and Likelihood Ratio G^2 statistics following Chi Square distribution. G^2 statistic is not used for small samples in general due to lack of its statistical reliability (Cochran, 1952). The numbers of categories of each variable are multiplied to determine the statistical inference base. Yet, as the sample size is large enough for the current study, G^2 statistic was also used as a complementary tool (Haberman, 1977).

Firstly, the relationship between income level per se and changing amount of products purchased and consumed in different categories were evaluated. Hereby it is important to define the categories of the variables. Level of income for the sample was categorized as indicated in Table 1 from 'below minimum wage' to 'above $ 942,12' (6.500 TL). The changing purchases for all considered products during COVID-19 pandemic were categorized as 'risen – 1, not changed – 2 and declined – 3'. Therefore, degrees of freedom for statistical testing appeared as 3*5= 15 for this part of the analysis. Referring to this statistical base, it was considered as beneficial to infer about changing amount of purchases and consumption of these four categories.

Checking out the figures in Table 2, it can be said that the share of individuals declaring rising, reducing, and stable purchases were similar for all product groups of FFVs and meat and dairies. Yet, the highest declination was observed in fruit and lowest in dairies consumption. This is not surprising considering the share of the products in the budget of consumers. The interviewed audience seemed to allocate more to FFVs before and higher declination in purchases and consumption of FFVs is expected accordingly.

After this classification, the linear relationships between income attributes and preference alterations were demonstrated and discussed consecutively. Firstly, the changing preferences were found not to be related directly to existing or recorded income level of consumers as demonstrated in Table 3. Therefore, we failed to reject lack of relationship hypotheses and we can infer that with rising income the demand for all product categories seemed to remain on the same level. In other words, the variation in demand for relevant product categories were found as non-related to the variation of households' income. Yet, it is important to keep in mind that this finding do not impose inexistence of a relationship. The statistics only infer unavailability of a linear relationship.

Despite the level of income, the relationship between declination in consumers' income and quantity of products bought is significant in all categories. The statistical findings were demonstrated in Table 4. The declination of spendable income

[1] Financial variables in Turkish Liras were converted into US Dollars by using the 2020 average TL/$ rate of Central Bank of Turkey: 1 $= 7,0337 TL

seemed to be related to amounts demanded/purchased due to test statistics used to detect linear relationship. However, the direction of the relationships for four product categories were detected via Pearson correlation coefficients that were demonstrated in Table 4. All linear relationship components have negative correlations that were significant as well. Therefore, the declination in product demand in all categories rises as higher as the amount of income lost by the participants within the process. In other words, for individuals that experiences more reduction in income, demand and purchases of products have declined as well within our sample.

Following general income level and variation in the income assessment, share of budgetary allotment was associated with the changing purchases. First the relationship between amount spent on FFVs and amount of fruits and vegetables bought were analysed. It was followed with spending on animal products and purchased amounts. The variation in the income devoted for FFVs were neither correlated with the amount of fruits purchased, nor with the vegetables. This finding has been confirmation of the level of income and purchasing amount changes. However, significance of the relationship for animal products and amounts of those products disable us to generalise this finding. This relationship is significant as demonstrated in Table 6. Following this identification, the direction of the relation was checked. With strongly significant positive coefficients, it is not hard to confirm that there is a positive relation between rising allocated budget and quantity purchased within the process. This was also an awaited situation.

Therefore, it can be briefly noted that, not the level of income but declination in the household income is related to the variation in purchases and consumption of FFVs, meat and dairies. In addition, with the rising share of animal products in the household income, the tendency to buy more meat and dairies rose as well within the sample and for the COVID-19 process. However, there detected no uprising or declining relationship for budget allotted to and purchases of FFVs. This is also an indicator for the socio-economic status of the audience interviewed online. Mostly middle-class individuals seemed to reach FFVs approximately on a desired and acceptable level. Their tendency to increase income that is used for FFVs purchases is lower than that the tendency for meat and dairies. Thus, it can be said that these individuals have been reaching adequate amount of FFVs during the survey time. The relationship of this tendency and COVID-19 needs to be considered as well as demand for protein - based consumption seemed to direct more attention within a linear analysis perspective.

Table 2. Changing Purchases of Main Categories during Covid-19 pandemic

	Rose	**Not changed**	**Declined**
Vegetables	159 (31,86 %)	304 (60,92 %)	36 (7,21 %)
Fruits	157 (31,46 %)	295 (59,12 %)	47 (9,42 %)
Meat Products	135 (27,05 %)	323 (64,73 %)	41 (8,22 %)
Dairies	159 (31,86 %)	316 (63,33 %)	24 (4,81 %)

Table 3. Income & Changing Purchases for FFVs and meat and dairy products

Income Level	**Vegetables**	**Fruits**	**Meat Products**	**Dairies**
X^2 (p)	2,69 (0,95)	5,98 (0,64)	8,56 (0,38)	6,33 (0,61)
Likelihood Ratio (G^2)	3,03 (0,93)	6,66 (0,58)	8,53 (0,38)	6,86 (0,55)

Table 4. Reduction in Income & Changing Purchases for FFVs, meat and dairy products

Income Reduction	**Vegetables**	**Fruits**	**Meat Products**	**Dairies**
X^2 (p)	15,86 (0,044)**	20,77 (0,007)***	40,88 (0,00)***	31,54 (0,00)***
Likelihood Ratio (G^2)	14,77 (0,064)*	19,38 (0,012)**	27,61 (0,00)	18,13 (0,02)**
Pearson C.C. (p)	-0,12 (0,009)***	-0,16 (0,00)***	-0,14 (0,00)***	-0,09 (0,03)**

C.I. * 90 %, **95 %, ***99%

Table 5. Budget Devoted for FFVs & Changing Purchases for FFVs

Income devoted for FFVs	**Vegetables**	**Fruits**
X^2 (p)	3,94 (0,41)	5,45 (0,24)
Likelihood Ratio (G^2)	3,85 (0,42)	5,25 (0,26)

Table 6. Budget Devoted for Animal Products & Changing Purchases for meat and dairy products

Income devoted for Animal Products	**Meat Products**	**Dairies**
X^2 (p)	12,34 (0,015)**	16,46 (0,003)***
Likelihood Ratio (G^2)	12,93 (0,011)**	16,59 (0,002)***
Pearson C.C. (p)	0,13 (0,003)***	0,12 (0,005)***

Discussion and Conclusion

This study aimed to detect existence of a relationship between consumers' changing level of income and budget share devoted to vegetative and animal products in accordance with tendency of households to purchase FFVs and animal products. It is inevitable to indicate main economic and social expectations from a group of people involve rising demand of any normal good in response to rising income. The presumed relationships were evaluated referring to the survey data from Turkey. However, under unexpected conditions, as it is the case for COVID-19, the assumed relationships might differ.

Therefore, survey data retrieved from 499 individuals was analysed within this research. As a result of the brief association tests, level of income seemed to have no association with the variation in quantity demanded for any product groups. The classified groups were FFVs (fruits and vegetables) and animal products (red/white meat and dairies). Under COVID-19 conditions, few consumers experienced declining demand and limited purchases of all product groups. Yet, demand for all categories seemed to rise by around 30 % during the process, while reduction was much limited. However, demand for fruits (9,42 %), meat products (8,22 %), vegetables (7,21 %) and dairies (4,81 %) declined relatively. While the declination and rising tendency were steady, the relationships were tested anyway.

In contrast to existing income level, variation of the income seemed to be correlated with measured demand. It was understood that, with declining income, the demand for all product groups had declined as well. A research indicated that especially meat and dairy consumption demand is also related with the concerns regarding that 'the pandemic stemmed from meat intake' (Poudel et al., 2020). However, it was indicated for the USA that 861 online participants tended to consume more meat products within the process to protect themselves with higher protein content (Chenarides at al., 2021). The interest on meat and dairy products remained at its previous levels or even increased despite rising prices and reducing supplies in the USA again within a different setting (Tonsor et al., 2021). Therefore, the tendency to purchase or consume meat and dairy products seemed to be varied. In addition to meat products, some researchers focused on health management and/or nutrition specialists who suggested protein-based diets including dairies as milk, yoghurt, butter and their derivatives (Muscogiuri et al., 2020). From a sales view, it was noted from a study undertook in Italy that consumers' tendency to buy products with longer shelf life has increased and packed milk was enlisted under this category as well (Bracale and Vaccaro, 2020).

When FFVs were considered, a study undertaken in Ethiopia with 3.245 participants via face to face survey in 2019 and phone surveys in 2020 indicated that households' fruit purchases have risen within the process, while there observed a declination in vegetable consumption. Part of the variation within the COVID-19 period was attributed to income loss, while protection and prevention appeared as another reason (Hirvonen et al., 2021). This study also confirmed the rising tendency to consume meat and dairy products.

This background research also confirmed the changing tendencies and relevance to household income and share of products in household budget. The findings are mostly in line with expectations. It was specifically understood that consumers in Turkey have tended to reach and consume more animal-based products within the pandemic process. The share their income devoted to these products have risen as well. It can be said that in contrast to many Asian countries close to the source of the virus, China or relevant developing countries, middle class members did not blame meat and dairies for the pandemic. They rather considered that these protein products would help them to empower their metabolism. Therefore, we can say that the significant finding of the study is the linear relation of rising income share for meat and dairies and rising demand for these products. However, there is still a room for further research on consumption level considering the effects of current COVID-19 pandemic and prospective future encounters.

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Author Contributions

Authors participated in preparation and editing of the research findings together and they are equal in terms of property rights. Dr. Ceylan had managed the online survey process earlier.

Conflict of Interest

There is no conflict of interest between co-authors.

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