Forgotten effects analysis in the consumer behavior of sustainable food products in Mexico

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Abstract. The world's population has exponentially increased in the last decades, the rising demand on resources evidences crucial challenges that need to be addressed to ensure humanity's current development pace without compromising the means for future generations. The purpose of the present study is to quantify the first and second order cause-effect degree of incidence that drives consumer behavior when selecting a sustainable product based on the opinions of academic experts in the field. The Forgotten Effects theory is employed for the treatment of information. The main advantage of this methodology is the combination of expert's opinions along to a robust mathematical procedure that allows obtaining not only the direct, but the indirect or hidden degree of incidence. The selected experts are academic leaders in the field of sustainability in Mexico. Results show high direct incidence on variables like education, income and culture and a strong indirect incidence on sustainable knowledge, environmental awareness and recommendation. The present study tries to shed light in quantifying the direct and indirect elements that encourage the consumer's choice of sustainable food products, moreover, understand the in-depth reasons of the discrepancy between the will and the actions of the consumers.

Keywords: Consumer Behavior, Sustainable Food Products, Forgotten Effects, Sustainable Consumption.

1. Introduction

In our days, humanity faces many challenges in food production, distribution and consumption. The fact that a quarter of the world's population presents obesity, another quarter suffers from famine and malnutrition and 1.3 billion tons of food are discarded without being consumed [1] are clear symptoms of the problem. Food inequality highlights inefficiencies of the food production system, reflecting an overrate of profit over the natural limits of waste and food production [2]. In our days the demand of the food industry requires 70% of the available drinking water on the planet [3], this exerts an hydric and environmental pressure hard to sustain [4]. These circumstances demand a considerable change in the current food production and consumption system to a more sustainable model [5].

These challenges and changes require technical developments along to the highest of will [2]. The sole development of the productive processes does not assure sustainability as the use and disposal of the product in many cases generates greater implications than its production [6], here the consumption choices of the consumer play an essential role.

The importance of consumer behavior and the reason why it became an inseparable part of the sustainable development goals and business strategy is that the purchase decisions determines the demand for raw materials, logistics, production, and all industries from services to finance [7, 8].

Recent surveys and studies highlight the fact that the consumers are increasingly concerned about the environmental crisis and they seek to make informed

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consumption decisions [7, 9–11]. These studies also emphasize that environmental knowledge and concern, are key factors that drive the sustainable consumer behavior [12–14].

The public expression in Mexico does not differ, figures from the 2017 census of the National Institute of Statistics and Geography show that over 80% of the Mexicans above 18 years-old express concern for environmental protection and climate change [15]. However, and although the population expresses being increasingly concerned with environmental problems, it is puzzling that citizens do not have adequate sustainable consumption behavior [16], as stated by Jacobsson et al., [17] in their study on consumer attitudes and the purchase of sustainable products "Why don't they do what they say?".

Futerra, an international strategic sustainability agency, in its survey of consumers in the United States of America and the United Kingdom in 2018, found that despite the desire to lead a more responsible and healthy life, 44% of sustainable products consumers said that "brands presented as sustainable did not only not help them to make a difference, they even made it more difficult" [6]. Considering this discernment of the consumer, companies that are in the segment of sustainable food products generate unsuccessful strategies because of misunderstanding the factors that actually affect the behavior of the sustainable consumer [7, 8].

Please note that every good offered in the market designed to satisfy a desire or a need [18] is considered a product, if the aforementioned good additionally generates a positive social and economic environmental impact along its value chain, it can be considered as a sustainable product [19].
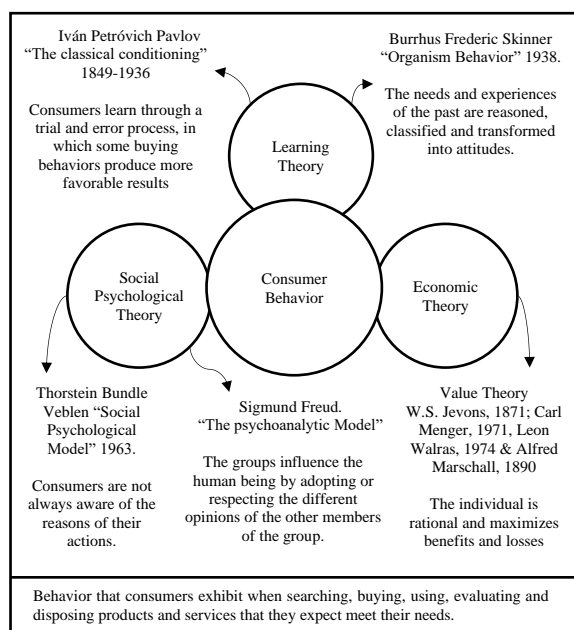
Figure 1. compiles some of the theories representing the multifactorial reasons influencing consumers behavior and can be divided into rational i.e. the chosen evaluated options that yield the greater satisfaction in the value-for money ratio [8], and on the other hand the non-rational, such as impulse, affective or social cognitive selected choices [16]..

Given the complexity and uncertainty generated in the purchasing process and the implicit consumer behavior, authors like Gil-Lafuente [23] point out that the classic models despite their broad interpretation of the phenomenon, are not always sufficient when trying to understand the mechanisms that drive persons to efficient consumption. Thus the need of employing alternative tools such as the Theory of Forgotten Effects [24] given its usefulness for the treatment of subjectivity and uncertainty, same that develops in the purchasing process.

Kauffmann and Gil-Aluja [25] mention that estimating the degree of the forgotten effect in a process that involves previously identified causes and effects, allows us to know the mistake made in the initial forecast, thus being able of redirecting the carried decisions [25]. Other studies that have successfully applied the forgotten effects theory are e.g. the valuation of attributes of a product or service [26], segmentation of markets [27], regional economic analysis and welfare of the population [28], growth strategies in the hospitality sector [29], in exchange rate forecasting [30].

The objective of the present study is to apply the Forgotten Effects Theory in the field of sustainability, the aim is to calculate the complete incidence cause-effect relation of the consumer behavior when selecting a sustainable product, along to identify the forgetfulness or hidden incidence of these relationships under the opinion of leading experts in the field of sustainability.

2. Methodology

The forgotten effects theory is firstly introduced in [25]. The theory is a composition of models designed to obtain the complete incidence relation [31, 32] between sets of elements without fully or partially omitting or overlooking initial information [33].

The model presents a series of rectangular matrices operations that can be described as follows: Let A be a set of *causes* such that $A = \{a_i / i = 1, 2, ..., n\}$ and B,

Iván Petróvich Pavlov "The classical conditioning" 1849-1936

Consumers learn through a trial and error process, in which some buying behaviors produce more favorable results

Burrhus Frederic Skinner "Organism Behavior" 1938.

The needs and experiences of the past are reasoned, classified and transformed into attitudes.

Learning Theory

Social Psychological Theory

Consumer Behavior

Economic Theory

Thorstein Bundle Veblen "Social Psychological Model" 1963.

Consumers are not always aware of the reasons of their actions.

Sigmund Freud. "The psychoanalytic Model"

The groups influence the human being by adopting or respecting the different opinions of the other members of the group.

Value Theory W.S. Jevons, 1871; Carl Menger, 1971, Leon Walras, 1974 & Alfred Marschall, 1890

The individual is rational and maximizes benefits and losses

Behavior that consumers exhibit when searching, buying, using, evaluating and disposing products and services that they expect meet their needs.

a set of *effects* defined by $B = \{b_j/\ j = 1,2, \dots, n\}$. Please note that B could be the same set as A. The composition of both elements in a $v(a_i, b_j)$ matrix results in the "direct incidence matrix". This arrangement named $[\underline{M}]$ establishes the direct and obvious cause-effect relation between both sets A and B. Following, a third set C of elements is introduced containing the effects of set B, this newly introduced set is defined by $C = \{c_k/\ k = 1,2, \dots, n\}$, and shows the cause-effect relationship between elements B and C in the matrix $[\underline{N}]$. The theory of forgotten effects allows us to establish the causal relationship of set A over C. For this composition, the max-min operator of a_i over c_k is used following:

$$v(a_i, c_k) = max\{min[v(a_i, b_j), v(b_j, c_j)]\}. \quad (1)$$

The composition $[\underline{M^*}] = [\underline{A}] \circ [\underline{M}] \circ [\underline{B}]$, being $[\underline{A}]$ the causes-causes and $[\underline{B}]$ the effects-effects relationships matrices, presents the possible indirect causal relations that might have been overlooked or obviated in the modelling process. Finally, the construction of $[\underline{M^*}] - [\underline{M}]$ allows the visualization of the total indirect effects that were not initially considered in the analysis, thus, forgotten effects.

The present study considers elements from the theory on consumer behavior [8, 19–21] to generate the set $[\underline{A}]$, causes and the components of the marketing mix [34, 35] to create the set of effects $[\underline{B}]$. Table 1 and 2 present the composing elements accordingly.

Table 1. Causes of consumer behavior of sustainable food products.

Dimension	Id	E1 Causes	ACC
Cultural	A	Social class	CS
	B	Culture	CL
Personal	C	Age	AG
	D	Education	EL
	E	Income	IL
	F	Gender	GN
Social	G	Recommendation	RC
	H	lifestyle	LS
Psychological	I	Sustainable knowledge	SK
	J	Environmental awareness	EA
	K	Social Acceptance	SA

Acronyms: Id, Identification; ACC, acronym.

Table 2. Effects of consumer behavior on sustainable food products.

Dimension	Id	E2 Effects	ACC
Product	a	Ecolabel	EL
	b	Quality	Ql

	c	Packaging	PK
	d	Brand	BR
	e	Certificate	CR
Promotion	f	Service	SR
	g	Publicity	PB
Price	h	Price	PR
	i	Payment Methods	PM
Place	j	Location	LT
	k	Local Commerce	LC

An essential issue for the correct implementation and interpretation of a forgotten effects analysis is the collection of information. In the present analysis, we follow previous works such as [28, 36, 37] to gather information. To evaluate the degree of incidence, the experts were asked to employ a usual scale for these types of studies [38], the linguistic endecadary scale. Table 3 presents the classic version of an endecadary scale.

Table 3. Endecadary scale

Null incidence	0
Practically null incidence	0.1
Almost null incidence	0.2
Very weak incidence	0.3
Weak incidence	0.4
Intermediate incidence	0.5
Fair incidence	0.6
Considerable incidence	0.7
Strong incidence	0.8
Very strong incidence	0.9
Absolute incidence	1

The objective is obtaining the vision of the experts in the field of sustainability over the analyzed phenomena. To achieve this goal, the experts were asked to give their valuations for the expression: *the degree of incidence that element a_1 presents over element b_1 is X.* Being X a linguistic valuation from endecadary scale. This process is repeated for all the elements in $[\underline{M}]$, $[\underline{A}]$ and $[\underline{B}]$. In November 2019 15 experts were consulted, from these a total of 8 valid responses were received. The experts are equally relevant in the decision-making process; therefore, their opinions are aggregated using the arithmetic mean. Please note that for the present study the experts were selected based on their academic trajectory in the field. All the experts are professors with more than 10 years of teaching experience in sustainability, all of them have published articles in representative peer-reviewed journals and are active members in the Earth Charter initiative [5], additionally, most of the experts are members of the Mexican National System of Researchers (SNI).

J	0.3	0.8	0.4	0.7	0.3	0.2	0.5	0.7	0.9	1	0.6
K	0.5	0.3	0.7	0.5	0.5	0.3	0.6	0.4	0.4	0.4	1

3. Results

The software Fuzzylog [39] is used to process the aggregated information retrieved from the experts. The objective is to create a robust model that shows the direct and indirect incidence degree in a methodical and reproducible way.

3.1. Average experts' incidence degree valuations

Tables 4 - 6 present the resulting matrices of the experts' average incidence degree valuations.

Table 4. $[\underline{M}]$ direct incidence matrix

	a	b	c	d	e	f	g	h	i	j	k
A	0.6	0.8	0.6	0.9	0.8	0.6	0.7	0.9	0.9	0.9	0.4
B	0.7	0.8	0.6	0.8	0.9	0.6	0.7	0.9	0.9	0.9	0.4
C	0.6	0.7	0.7	0.8	0.7	0.5	0.6	0.6	0.8	0.8	0.4
D	0.8	0.8	0.7	0.8	0.9	0.6	0.7	0.7	0.8	0.8	0.6
E	0.7	0.8	0.6	0.8	0.9	0.6	0.7	0.7	0.9	0.9	0.4
F	0.7	0.7	0.6	0.8	0.8	0.6	0.7	0.7	0.8	0.9	0.5
G	0.8	0.5	0.7	0.7	0.9	0.6	0.6	0.8	0.7	0.5	0.5
H	0.9	0.7	0.6	0.6	0.9	0.6	0.7	0.7	0.8	0.8	0.4
I	0.7	0.7	0.7	0.6	0.8	0.3	0.4	0.8	0.4	0.4	0.4
J	0.4	0.4	0.3	0.3	0.7	0.3	0.6	0.7	0.9	0.8	0.5
K	0.5	0.7	0.4	0.7	0.5	0.6	0.7	0.6	0.9	0.9	0.5

In general, the experts consider culture, education, income and social class as the most relevant and influential *causes*, over the general established qualities for a sustainable food product. On the other hand, the causes with the lowest average incidence are sustainable knowledge and environmental awareness with a valuation of 0.52 and 0.56 each. As mentioned in [25], "risks are not always explicit, visible or immediately perceived, sometimes these are hidden and are nothing more than the effects of effects, or an accumulation of causes".

Following the Forgotten Effects Theory, the experts were asked to give their opinion regarding the relation between causes and the relation between effects. Table 5 and Table 6 present the concentrated average opinion of the experts in these subjects.

Table 5. $[\underline{A}]$ cause – cause matrix

	A	B	C	D	E	F	G	H	I	J	K
A	1	0.6	0.4	0.7	0.8	0.3	0.6	0.7	0.7	0.7	0.6
B	0.6	1	0.4	0.7	0.6	0.5	0.6	0.6	0.9	0.9	0.5
C	0.4	0.6	1	0.7	0.7	0.4	0.6	0.7	0.5	0.6	0.5
D	0.7	0.8	0.7	1	0.6	0.4	0.7	0.8	0.9	0.9	0.3
E	0.8	0.7	0.5	0.6	1	0.3	0.5	0.8	0.6	0.6	0.5
F	0.3	0.4	0.4	0.6	0.6	1	0.6	0.5	0.5	0.5	0.3
G	0.6	0.5	0.5	0.6	0.5	0.3	1	0.5	0.7	0.7	0.4
H	0.8	0.7	0.6	0.6	0.5	0.5	0.6	1	0.6	0.7	0.4
I	0.4	0.9	0.5	0.7	0.5	0.2	0.5	0.8	1	0.9	0.4

Table 5 shows the average valuation given by the experts regarding the cause – cause incidence relationship. Please note that the main diagonal shows the incidence degree of an element over itself, therefore it will always be 1. In general, education is the cause with the highest incidence degree 0.72 over the rest of the causes. Gender with an average 0.5 and social acceptance with 0.52 are the lowest valued causes by the experts. Please note the overall high valuation between causes, in general, all the cause-cause valuations have an average degree of 0.5 or higher i.e. from intermediate to high incidence.

Table 6. $[\underline{B}]$ Effect – effect matrix

	a	b	c	d	e	f	G	h	i	j	k
a	1	0.8	0.7	0.8	0.9	0.4	0.7	0.7	0.2	0.5	0.6
b	0.7	1	0.8	0.8	0.9	0.5	0.6	0.8	0.2	0.6	0.5
c	0.7	0.7	1	0.7	0.8	0.5	0.4	0.6	0.3	0.5	0.6
d	0.7	0.7	0.8	1	0.8	0.5	0.6	0.7	0.2	0.7	0.7
e	0.9	0.9	0.8	0.9	1	0.6	0.7	0.8	0.3	0.7	0.5
f	0.3	0.6	0.3	0.7	0.7	1	0.6	0.5	0.6	0.6	0.7
g	0.6	0.4	0.5	0.8	0.7	0.5	1	0.7	0.5	0.7	0.6
h	0.6	0.8	0.7	0.8	0.8	0.6	0.6	1	0.5	0.7	0.7
i	0.2	0.3	0.2	0.5	0.4	0.8	0.6	0.7	1	0.6	0.7
j	0.5	0.6	0.7	0.7	0.5	0.7	0.6	0.8	0.6	1	0.7
K	0.6	0.7	0.7	0.6	0.5	0.6	0.5	0.6	0.6	0.7	1

Table 6. presents the experts' average valuated incidence degree for the effects-effects relation, for the specific case of this study, the qualities of a sustainable product were considered. Such as Table 5. the main diagonal of this matrix presents 1, meaning the highest incidence degree of the considered elements. Certifications, with an average 0.74 are the highest average valuated effects followed by price 0.72 and on the other hand, payment methods with 0.55 presents the lowest valuation.

3.2. Forgotten Effects methodology results

Tables 7 – 9 present the resulting convoluting matrices obtained from applying Eq. 1 and following the Forgotten Effects methodology [25].

Table 7. $[\underline{A}] \circ [\underline{M}]$ convolution matrix

	a	b	c	d	e	f	g	h	i	j	k
A	0.7	0.8	0.7	0.9	0.8	0.6	0.7	0.9	0.9	0.9	0.6
B	0.7	0.8	0.7	0.8	0.9	0.6	0.7	0.9	0.9	0.9	0.6
C	0.7	0.7	0.7	0.8	0.7	0.6	0.7	0.7	0.8	0.8	0.6
D	0.8	0.8	0.7	0.8	0.9	0.6	0.7	0.8	0.9	0.8	0.6
E	0.8	0.8	0.6	0.8	0.9	0.6	0.7	0.8	0.9	0.9	0.6
F	0.7	0.7	0.6	0.8	0.8	0.6	0.7	0.7	0.8	0.9	0.6

G	0.8	0.7	0.7	0.7	0.9	0.6	0.6	0.8	0.7	0.7	0.6
H	0.9	0.8	0.6	0.8	0.9	0.6	0.7	0.8	0.8	0.8	0.6
I	0.8	0.8	0.7	0.8	0.9	0.6	0.7	0.9	0.9	0.9	0.6
J	0.7	0.8	0.7	0.8	0.8	0.6	0.7	0.8	0.9	0.8	0.6
K	0.6	0.7	0.7	0.7	0.7	0.6	0.7	0.6	0.9	0.9	0.5

Table 8. $[\underline{M^*}]$ convolution matrix

	a	b	c	d	e	f	g	h	i	j	k
A	0.8	0.8	0.8	0.9	0.8	0.8	0.7	0.9	0.9	0.9	0.7
B	0.9	0.9	0.8	0.9	0.9	0.8	0.7	0.9	0.9	0.9	0.7
C	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.8	0.8	0.8	0.7
D	0.9	0.9	0.8	0.9	0.9	0.8	0.7	0.8	0.9	0.8	0.7
E	0.9	0.9	0.8	0.9	0.9	0.8	0.7	0.8	0.9	0.9	0.7
F	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.8	0.8	0.9	0.7
G	0.9	0.9	0.8	0.9	0.9	0.7	0.7	0.8	0.7	0.7	0.7
H	0.9	0.9	0.8	0.9	0.9	0.8	0.7	0.8	0.8	0.8	0.7
I	0.9	0.9	0.8	0.9	0.9	0.8	0.7	0.9	0.9	0.9	0.7
J	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.8	0.9	0.8	0.7
K	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.8	0.9	0.9	0.7

Table 9. $[\underline{M^*}] - [\underline{M}]$ forgotten effects matrix

	a	b	c	d	e	f	g	h	i	j	k
A	0.2	0	0.2	0	0	0.2	0	0	0	0	0.3
B	0.2	0.1	0.2	0.1	0	0.2	0	0	0	0	0.3
C	0.1	0	0.1	0	0.1	0.3	0.1	0.2	0	0	0.3
D	0.1	0.1	0.1	0.1	0	0.2	0	0.1	0.1	0	0.1
E	0.2	0.1	0.2	0.1	0	0.2	0	0.1	0	0	0.3
F	0.1	0.1	0.2	0	0	0.2	0	0.1	0	0	0.2
G	0.1	0.4	0.1	0.2	0	0.1	0.1	0	0	0.2	0.2
H	0	0.2	0.2	0.3	0	0.2	0	0.1	0	0	0.3
I	0.2	0.2	0.1	0.3	0.1	0.5	0.3	0.1	0.5	0.5	0.3
J	0.4	0.4	0.5	0.5	0.1	0.5	0.1	0.1	0	0	0.2
K	0.2	0	0.3	0	0.2	0.2	0	0.2	0	0	0.2

The absolute indirect incidence matrix shows that the elements with the highest forgotten effect are: Sustainable knowledge with 28%, followed by environmental awareness 25%, and recommendations 11%. On the other hand, the variables displaying the lowest forgotten effect, therefore the most well-known effect are: Education 7% and social class 8%.

Please note that Table 9. displays the absolute indirect incidence degree, here a value of 0 represents a null forgotten effect, implying a complete initial understanding of the indirect effect that could be generated by the systemic behavior of the model. The highest forgotten effect registered in Table 9. are 6 binomial elements, all with a forgotten effect of 0.5, meaning that the direct valuation is equally relevant than the partial or omitted initial information.

4. Discussion

Results show diverse interesting implications that are worth to note. Firstly, sustainable knowledge and environmental awareness are conventionally some of the most obvious general *causes* that affect in some degree the sustainable consumer behavior [12, 14, 40–42], however results show that not all the product conditions present a strong direct incidence, e.g. a high direct valued (DV) 0.81 incidence is established between sustainable knowledge and certificates, but little direct incidence 0.35 is found between sustainable knowledge and payment methods. These differences generate a higher accumulation or accumulated value (AV) of forgotten effects (see Table 9).

4.1. Environmental awareness

Environmental awareness is the second condition with the highest amount of forgotten effects accumulation. In contrast with sustainable knowledge this binomial shows a higher dispersion between diverse cause-effects elements including services, brand, package, quality and ecolabel.
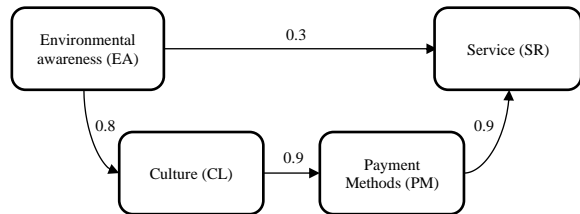

Figure 3. Interposed key relationship between environmental awareness and service.

From the initial 0.3 direct incidence given by the experts, there is at least 0.5 total indirect incidence that has not being considered. The interposed relationship of 0.8 between culture and payment methods generate the 40% increment in the original effect.

The overall forgotten effects calculations present a symmetric causality in the differences between the direct incidence valuations and the accumulated valuations of environmental awareness and brand, ecolabel, quality and package. Figure 4 presents the interposed relations between culture, sustainable knowledge and certifications, being this last one the initially high valued direct incidence among the rest of the causes.
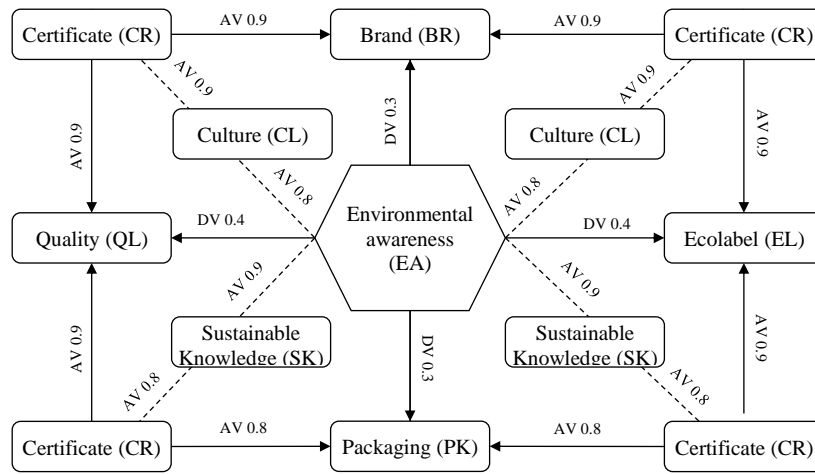
Figure 4. Interposed key relationship between environmental awareness and brand, ecolabel, packaging and quality.

4.2. Sustainable knowledge analysis

A case of a higher forgotten effect is the relation between sustainable knowledge and services. In general, the experts underestimated with a value of 0.3 the incidence that the sustainable knowledge of a consumer has over the preferences of services when selecting a product.
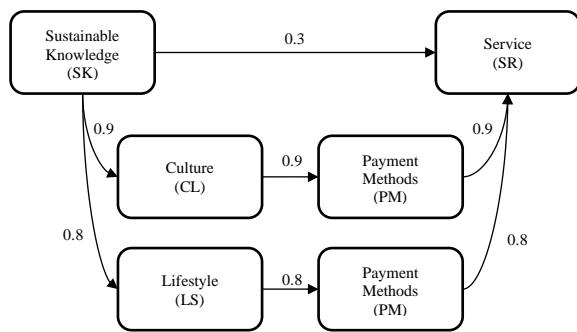

Figure 2. Interposed key relationship between sustainable knowledge and service

An in-depth analysis of the causal relation between the selected elements shows a forgotten effect of at least 0.5. The interposed relations affecting this result are culture and lifestyle, these factors directly impact the effect element payment method which presents a high direct incidence with service.

4.3. Recommendation

The highest forgotten effect for recommendation is quality, the initial direct value given by the experts is 0.5 (intermediate incidence), however the interposed

relationship given by certificate (0.9) generate an absolute indirect incidence of 0.4, ultimately this forgotten effect generates a very strong incidence between recommendations and quality. Figure 5. presents the interposed key relationship between the mentioned elements.
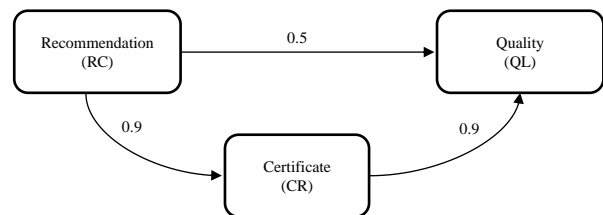
Figure 5. Interposed key relationship between recommendations and quality.

5. Conclusions

The present study applies the Forgotten Effects Theory in consumer behavior when selecting a sustainable product. The aim is quantifying the direct and indirect relationship that variables in the field of sustainability hold based on experts' opinions.

Results conclude that the highest Forgotten Effect is accumulated in the consumer behavior variables: sustainable knowledge, environmental awareness and recommendations.

An interesting and noteworthy phenomenon of the results is the strong linkage given by the indirect effects between environmental awareness, sustainable knowledge, and culture; as key conditions, determinants of consumer behavior of sustainable food products. This synergy between culture and

environmental concern is defined by Iris Vermeir & Wim Verbeke [43] as a tendency to reflect on postmodern society and its individuals and their existing cultural norms. Likewise, sustainable knowledge is strongly linked to emotional and sociocultural attitudes. Bamberg & Möser [44] allude that this condition of the consumer does not act on decision making directly, but has an indirect effect that is generated through reflection, guilt, socio-cultural norms and feelings of concern and responsibility.

In the particular case of feeding, such reflective behavior plays an important role in the decision on what a person would be willing to eat or not to maintain his healthy-body [45]. However, safety is an attribute that cannot be observed by the consumer, either before or after, so it must be guaranteed [46]. A recurring element for them is the certifications, which the consumer perceives as a risk reduction, increase in quality and credibility in the process and the product [47], the importance of certification in the consumer behavior of sustainable foods matches with the results of this research, where the "certificates" serve as the generator of accumulated value between the conditions of the consumer "environmental concern" and the qualities of the product "quality", "brand", "Ecolabel" and "Packaging "(See Figure 4).

The Forgotten Effects Theory has been successfully applied in numerous studies, for our specific case the implications about knowing the initially omitted settings that generate an overall indirect effect are various e.g. visualizing a general picture of the elements that experts catalogue as vital for a sustainable consumer when selecting a product. In this case the elements in the study that have 0 degree of forgotten effect can be considered as fully understood, however, a deeper insight must be taken for those elements where a higher forgotten effect is shown. The fact that some of the most initially obvious elements are not fully understood is both, interesting and challenging, as they consider complex attitudinal conduct of the consumers. It should be noted that while the conventional qualities of a product such as price or quality are important decision factors, in a specialized market niche such as the sustainable food sector, consumers tend to have a more specific profile [43] with more developed ethical considerations and are identified with incomes and education above average [11, 40].

Regarding the key interposed element "payment methods" and its indirect relationship with environmental concern and sustainable knowledge, Foscht, et. al. [48] indicate that the preference of an individual for a payment method depends on the personal characteristics of itself. The level of income and education are decisive in choosing a payment method [49–51]. In accordance with the results presented, given the consumer profile, this provides a first approximation to understand the strong incidence of the "payment methods" factor as an indirect-forgotten element, however, it will be necessary to address a deeper analysis to confirm said association.

The present research has some limitations, firstly the number of experts considered for the analysis, secondly, the possible omitted dimensions included in the model. Further research is needed, both to tackle the present limitations as well as advancing on the understanding of the indirect incidence degree that affect consumer behavior when selecting a sustainable product. This study presents an initial step for the research on sustainable products consumer behavior applying the Theory of Forgotten Effects, nonetheless an expansion of this study is suggested, to consider not only academic experts in the field of sustainability, but experts in the industry and sustainable products consumers, thus obtaining a global picture of the principal stakeholders in the phenomena, visualizing discrepancies and create strategies for decreasing the possible found differences.

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