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DETERMINANT ATTRIBUTES AND MENTAL MODELS IN THE DECISION TO PURCHASE SMARTPHONES BY GENERATION Z

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1 INTRODUCTION

Faced with the change in products, consumers every day make decisions about which brands to choose and which brands to renounce (Davvetas & Diamantopoulos, 2018). Electronic products, including Smartphones, play a fundamental role in the lives of most consumers, including young teenagers, students, and corporate executives (Kaur & Soch, 2017). Understanding how the attributes of electronic products influence the consumers' purchasing decision remains an exciting area of academic research (Hew, Badaruddin, & Moorthy, 2017). Previously, researchers have already mentioned that considering different alternatives lessens the perceived importance of the focal objective more than considering similar choices (Van Osselaer & Janiszewski, 2012).

Previous studies have not shown a clear relationship between the purchase decision attributes used by consumers in the purchase of electronics, but point out ways and suggestions for researches to contribute to the theme. Among the studies already carried out on the subject, Montanari, Rodrigues, Giraldi, and Neves (2018) analyzed the influence of the country of origin in the decision to consume a product and verified that this characteristic is not very important. Among other analyzed attributes (such as brand, price, warranty, and store location), only brand and price are considered determinants.

Pinto, Kaynak, Chow, and Zhang (2019) corroborate the literature by stating that price is no longer the main determining attribute in smartphone acquisition. Consumers consider features such as connectivity, camera quality, and amount of memory to be more determinant. For generations, younger consumers are more sensitive to durability, while older consumers consider connectivity and memory storage to be the most important criteria. Bezerra, Arruda, & Merlo (2017) pointed out attributes such as status, high quality, high durability raw materials, influences from reference groups (friends, family, co-workers), the importance of brands, and technology involved in the products are determining attributes. The research by Bezerra et al. (2017) also did not analyze the relationship between these attributes in the formation of the purchase decision.

For the theoretical contribution of this study, we adopted two strategies used and cited by Sandberg and Alvesson (2011): incompleteness and inadequateness. For incompleteness, the study is based on generation Z consumers connected all the time (Babin & Harris, 2016) and who were born in the world of technology (Bencsik, Juhász, & Horváth-Csikós, 2016). The study meets the need pointed out by Kim, Lee, and Lee (2020), for research with different generations. As for inadequateness, previous research neglects that the purchase decision is made only after the formation of a perception (Handler & Chang, 2015; Pinto et al., 2019; Kim, Lee & Lee, 2021), in which the mental model is created to represent the reality perceived by consumers (Lee & Chen, 2016). Studies point to decisive attributes in the purchase decision process, such as Innovation (Akkucuk & Esmaeili, 2016), Durability / Lifetime (Handler & Chang, 2015; Pinto et al., 2019), Usability (Pinto et al., 2019), Technology, Operational System (Handler & Chang, 2015; Lee & Chen, 2016; Sujata et al., 2016), and Status (Handler & Chang, 2015). However, if the literature analyzes these attributes in isolation, it neglects a relationship of interdependence and influence between these determining attributes for decision making. This neglection is the contribution of this research to verify the determinant attributes in buying smartphones and, from the lens of mental maps, to analyze their interrelation in a perceptual model that allows decision making. Pinto et al. (2019) proposed that future studies choose to use an innovative exploratory method, such as focus group to identify new attributes used by consumers in the purchase decision process. In the work of the authors carried out in China, they used the Best - Worst (BW) method, a scaling method. Pinto et al. (2019) identified that

connectivity, price, and memory capacity are considered the most important attributes in the purchase decision, while indications/recommendations from others, ease of handling, and availability of applications are considered the least important.

The study also pointed out the relative importance of attributes varying between consumers' demographic segments, specifically on sex, age, and income. However, the survey presents only an initial view of how consumers of Chinese culture behave when buying a smartphone, and highlight the need for further studies to compare results in countries with different realities, such as Brazil. In addition, rapid technological advances can cause the attributes used by consumers to also change. This research contributes to filling this gap pointed out by the authors, mainly in the construction of the reasoning of consumers of smartphones of generation Z.

Lee and Chen (2016) point out that mental models are adequate to understand buying behavior, as it is understood that mental models are diagrams of cognitive schema, and taking into account that different people tend to have different cognitive schemas in relation to the same product, it can provide insights for organizations. The precursor to the theory of mental models, Johson-Laird (1983) states that the mental model is the perspective from which people see things and is also a cognitive schema diagram.

As this is a study involving products based on technology, it is relevant to highlight the generation Z choice for this analysis, as these consumers were born in the world of technology (Bencsik, Juhász, & Horváth-Csikós, 2016). Generation Z is those consumers born from the 2000s until 2010 (Hoxha & Zeqiraj, 2019; Sinha & Lu, 2019). This market segment includes the most educated consumers, who easily adapt to changes and are those consumers who are connected at all times (Babin & Harris, 2016). Generation Z members are also socially aware, tech-savvy, particularly innovative, and constantly looking for a change. They are continuously connected to smartphones, tablets, and the Internet of Things (Sinha & Lu, 2019).

In addition, it is relevant to use generation Z as a study context, as they are no longer considered adolescents (Duffett, 2017). One of the weaknesses in studying this generation is that these consumers want to save money on their purchases (Sinha & Lu, 2019), but the data survey assumes that people already have the mentioned types of device, having already gone through the experience of decision making and the choice of the respective attributes.

Thus, this study was developed with the purpose to answer the following research question: how does the generation Z consumer prioritize certain attributes in the decision to buy smartphones based on the configuration of his mental model? Hence, the objective of this study is to analyze the purchasing decision attributes of the generation Z consumers based on the construction of the mental model in the smartphone purchase decision.

2 THEORETICAL FOUNDATION

2.1 Purchasing Decision Determining Attributes

The determining attributes in the purchase decision are those of great importance to consumers, and these attributes help them make the purchase decision. These attributes are considered the best option to maximize satisfaction and achieve the consumer´s expected values, being the best possibility of response to satisfy their wishes in a certain product and / or brand (Alpert, 1971).

Considered that the purchase decision attributes play a fundamental role in differentiating the offers` packages between competitors in a given market, especially for generic products or commodities. Later, Espartel & Slongo (1999) pointed out that the attributes can be interpreted as properties or intrinsic characteristics to the product, being concrete, observable, measurable and of relevant importance in the choice between alternatives, such as: color, size, weight and design. The purchase decision attributes used by consumers in the

decision-making process are a positive factor in brand positioning in the minds of consumers (Lehmann & Winer, 19997).

Research on the purchase decision process has increasingly focused on the effect of comparisons on consumer choice (Simonson, Bettman, Kramer, & Payne, 2013). Among the benefits of a product, the brand stands out. In competitive markets, it is believed that the brand positioning strategy through the purchase decision attributes contributes to obtaining a differentiated, distinctive, and easily recognized position by consumers (Heslop & Nadeau, 2010). The company's investment in the brand, through advertisements and other marketing actions, start bringing significant results when customers begin to consider the company's products in the options available in the market (Girard, Trapp, Pinar, Gulsoy, & Boyt, 2017). Brands play a key role in consumer decision making and help to reduce indecision (Auger, Devinney, Louviere, & Burke, 2010). Mishra (2016) studied consumer behavior and identified the reason why customers love certain brands, with product design and quality of experience being the main reasons for buying branded products.

With the advent of technology and the democratization of access to information, consumers have access to information regarding the products and services that they wish to purchase, at any time and place. Today, consumers have become more demanding, requirements, and preferences at the time of purchase have changed. What used to be luxury in the past has now become a "necessity". Likewise, the number of purchase options has increased significantly, so consumers have several alternatives, and competition in the market has increased with the advancement of technology in general (Bhattacherjee & Adhikari, 2018).

Consumers are willing to pay a high price for a product that may have benefits, which delight them (Woon, Mee, Alam, & Samooty, 2013). In existing research, it has already been identified that organizations mistakenly associate consumers looking for price confirmation with brand changes (Woon et al., 2013). Therefore, it is considered that the price is not the main factor that influences the change of brand of certain products, there are other attributes used by consumers in the purchase decision.

On the other hand, the brand image positively influences the consumer's brand exchange behavior. Nykanen (2013) explained that the brand image is one of the attributes that attract the brand change when purchasing a smartphone. A good brand image becomes a strong attraction to lead competitors' customers to buy the products that are offered. Ling, Govindan, & Radhakrishnan (2018) corroborated mentioning that the brand image has a significant relationship in influencing the exchange of consumer brands. As such, consumers are influenced by the smartphone's brand image when they are considering changing brands or making decisions for their next purchase. Products with a recognized brand in the market, generally have a better brand image than other brands, and when consumers consider changing brands, they look for products with a favorable image (Appiah, Ozuem, Howell, & Lancaster, 2019).

However, it is worth noting that consumers do not change brands easily because of sales promotion; even so, sales promotions directly influence the exchange of consumer brands (Ling et al., 2018). Therefore, consumers are influenced by other product attributes in the smartphone purchase decision, in addition to the brand. A bibliographic survey carried out in databases such as Scopus, Spell, and EBSCO, with a time period of the last 10 years, sought to identify the studies carried out on the decision to purchase electronic products. Studies that have already identified attributes of electronic products purchase decision in the perception of consumers were identified,with an emphasis on Lee and Chen (2016), who identified vital attributes to measure the quality of social media on smartphones through students' mental models.

In addition to the attributes already identified in the literature, there are new variables related to the purchase process of electronic products that could focus on the multidimensions of psychological, personal, fashion, and social relationships, and not just examine them from

functional or cost considerations (Chen, Liu, & Ann, 2018). For this, consumers' mental models are used to identify new attributes not yet found in the literature.

2.2 Mental Models

In 1943, with the publication of the book “The Nature of Explanation”, written by Scottish psychologist Kenneth Craik, the term mental model arises. The author defines the mental model as the expression of the representation of elements and situations of the environment. The application of mental models started by psychologists and cognitive scientists in the 1940s and, gradually, the area of Administration has also used this theory (Senge, 1990), specifically in the marketing area.

Broon and Broon (2003) claimed that a mental model is essentially a personal theory of how things work. Models are made up of the most important factors attributes perceived and the various relationships that unite the factors to produce a means of interpreting sensory inputs, affecting how consumers interpret situations and guide behavior. Chermack (2003) stated that mental models include individual and group perceptions, including exogenous and endogenous variables, alternative solutions for action and decision. The author further states that any mental model is better than none, but an inadequate mental model leads to undesirable results (Chermack, 2003).

Wood, McKelvie, and Haynie (2014) pointed out that mental models are conceptual structures and are related to the knowledge that the consumer has about the perceived reality (of product/service), and from that, the consumer builds relationships within this reality to predict results based on personal understanding. For De Toni et al. (2014), mental models are a way of seeing the world differently, with an image in the consumer's mind and with a strong influence on their behavior in the purchase decision process.

Mental models influence how consumers perceive a given context, how they process information, and, consequently, how the decision-making process will be in the face of the situation in place (De Toni, Reche, Larentis, & Sperandio Milan, 2015). For Pryor et al. (2016), mental models are shortcuts for information processing, which reduce the time and effort of consumers to evaluate information related to products and make more assertive decisions. vários estudiosos enfatizaram a importância da influência dos pares no comportamento de compra dos consumidores (Hahn e Kim, 2013; Lee, 2014). In research in marketing and purchasing decisions, Numerous scholars have emphasized the importance of peer influence on consumers’ purchasing behavior (Hahn and Kim, 2013; Lee, 2014).

Mental models are dynamic, constantly being built, being adjusted, refined, and recreated in the dynamics of the environment, depending on the reality of consumers, as they have an active role at the moment that affect the experience of individuals (Chermack, 2003). When building their mental models, consumers use characteristics related to the communication of products and services, past experiences, and with the environment, in a continuous cycle between experience, evaluation, and the application of certain concepts (Ruff & Shoho, 2005).

3 METHODOLOGICAL ASPECTS

This research is qualitative and exploratory, using Interactive Qualitative Analysis (IQA). The use of IQA is an innovative way of doing qualitative research (Davis, 2019), especially in consumer behavior studies. The IQA protocols, as designed by Northcutt and McCoy (2004), ensure that the researcher has minimal influence on the data created by the participants, as the sets of rules govern the research process. The objective is to ensure that participants have a shared understanding of the phenomena, developing and analyzing collectively the causal relationships between the themes (affinities). The result of IQA is a mental map of a group or individual about a certain phenomenon.

In this research, the decisions for choosing individuals corresponded to the criteria of minimum distance and maximum power in relation to the phenomenon under study (Northcutt & McCoy, 2004). In this way, the individuals were chosen based on accessibility, to constitute the group of research participants, consumers of smartphones of the Samsung and Apple brands of Generation Z were identified (born from the 2000s). The selected participants used equipment with high technology, performance, and approximate prices (latest Apple and Samsung models launched on the market). Consumers participating in the survey showed no difference in social class in relation to the use of smartphones from Samsung and Apple, they have already used the smartphone brand for more than 3 years, having acquired the device in the last 6 months. Based on this filter, the models used by consumers participating in the survey are the most coveted in the market.

Therefore, the respondents have reduced distance and maximum power over the phenomenon under study, maintaining the necessary homogeneity of the group (Northcutt & McCoy, 2004). The chosen consumers use the smartphone frequently with the various features that the device provides (such as e-mails, bank transactions, messages, calendar, and others) and there is the power of decision/purchase of the device, with no one that received the smartphone as a gift, but rather, which he acquired with his own resources. In this way, the field research was carried out in 4 phases, being: 1st) research design; 2nd) focus group; 3rd) interviews; and 4th) report, which will be detailed in the topics that follow.

3.1 Research Design

Initially, it was necessary to define the problem statement, the definition of the constituent groups; and the formulation of the research question (Northcutt & McCoy, 2004). The research question developed in this study is: how does the generation Z consumer prioritize certain attributes in the decision to buy smartphones based on the configuration of his mental model? To start the data collection process, the focus group members developed categories of meaning or affinities (induction) from their thoughts and reflections on the purchase decision process. They then refined and defined these (induction and deduction) using discussions to reach consensus.

Ten consumers of smartphones belonging to Generation Z participated in the research (16 were invited), approached and selected for convenience within the criteria of the method that provides for homogeneity among the group, maintaining a number of consumers as recommended by the IQA, that is, between 8 to 20 participants. These participants were involved during data collection via focus group and all were also interviewed individually. Following the guidelines of the Ethics Committee, it was decided to maintain the confidentiality of the participants, naming them only as Consumer 1, Consumer 2, and so on until Consumer 9 (in the interviews, 1 consumer was withdrawn at his own request, citing personal reasons for not continuing). Finally, the third stage of the research design was the formulation of the research question to be explored in the focus group. This question was formulated from the research problem that guided the study; however, it was formulated facilitating the participants` understanding.

3.2 Focus Group and Data Analysis

As recommended by Northcutt and McCoy (2004), the focus group aims to identify the “pieces of the map”. It started with a silent brainstorming where the participants were invited to write on cards, their shopping experiences with the smartphone. On each card just a word, a single thought. In this stage of the research, 72 affinity cards related to the smartphone purchase decision were generated. Subsequently, the 72 affinities were grouped into 8, which constitute the determining attributes in purchasing smartphones. The grouping was carried out by the

research participants and mediated by the researchers. Data were collected via the focus group on March 11, 2020.

After this process of "silent brainstorming", the cards were read so that the group's understanding is homogeneous. Subsequently, the participants created a brief definition of each of the affinities created. This step is called axial coding (Northcutt & McCoy, 2004). It is worth mentioning that the affinities shown in Figure 1 emerged from the research field, during the realization of the focus group.

Affinities	Definition
1. Price	Monetary amount that I am willing to pay.
2. Screen size	Screen size that I want
3. Camera quality	Sharpness, focus and vivid colors to record moments.
4. Influences	Friends, family and celebrities who can influence me to make me buy a smartphone.
5. Hardware	The physical part of a smartphone, what is needed to make the device work.
6. Software	Applications, security and the way the smartphone works.
7. Advertising	Form that the brand / company uses to present the product to the market.
8. Design	Smartphone colors, shape, thickness and layout.

Figure 1. Affinities resulting from the focus group and definitions

After creating and defining affinities, participants in the focus group analyzed the nature of the relationships between affinities. Each participant received a form called the Affinity Relationship Table (ART), with the names of the categories and a space to identify the relationship between them, with three possibilities being possible: A → B (A influences B), B → A (B influences A), or < > (no relation). This stage is known as theoretical coding (Northcutt & McCoy, 2004).

In this sense, when the cumulative percentage of frequencies reaches 80%, you can select affinities, since the greatest variance will be understood in these relationships. According to the cut line of this survey, the cumulative percentage of frequencies reaches 78% in the twenty-seventh pair of relationships between affinities (1 <3).

To eliminate ambiguous relationships, which receive votes in both directions, Northcutt and McCoy (2004) suggested examining the relationships selected in the previous step, aiming to identify conflicts. At this time, seven pairs of relationships (1¬ 3, 1 → 2, 2 → 8, 3 → 4, 3 ¬ 7) were eliminated, leaving twenty pairs used in the construction of the map. From these results, the Interrelationship Diagram (IRD) of the focus group was constructed. The diagram construction process was carried out as follows: in the relationship between attributes 1 and 2, in column 2 and line 4, there is an up arrow pointing the predominant relationship of attribute 2 to 1, and in column 3 and line 2, there is also an arrow pointing to the relationship of attribute to 1; and in this way all relationships were built.

Tabular IRD – Sorted in Descending Order of Δ											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**OUT**	**IN**	**Δ**
4			↑		↑	↑	↑	↑	5	0	5
1		←	↑		↑	↑		↑	4	1	3
2	↑						↑	←	2	1	1
5	←		←	←		↑	↑		2	3	-1
8	←	↑	↑	←			←		2	3	-1
3	←			←	↑	↑	←	←	2	4	-2
7		←	↑	←	←	←		↑	2	4	-2
6	←		←	←	←		↑		1	4	-3

Figure 2. Focus group Interrelationship Diagram (IRD) in descending order of Δ.

Figure 3 shows the System Influence Diagram which was created based on the information from the focus group. In this same figure, the topological zones of the model are shown. Affinities are arranged horizontally, from left to right, according to the topological zones: primary driver, secondary driver, secondary results, and primary results (Northcutt & McCoy, 2004). In this mental map, there was no affinity characterized as the pivot of the process. With the affinities positioned in their respective topological zones, each IRD constant relationship was drawn and is represented in Figure 3.

The primary driver is related to hardware and also to design. The screen size is related to price and advertising. The price is related to hardware and also to design. In turn, the hardware is related to advertising, and the design is related to the screen size and camera quality.

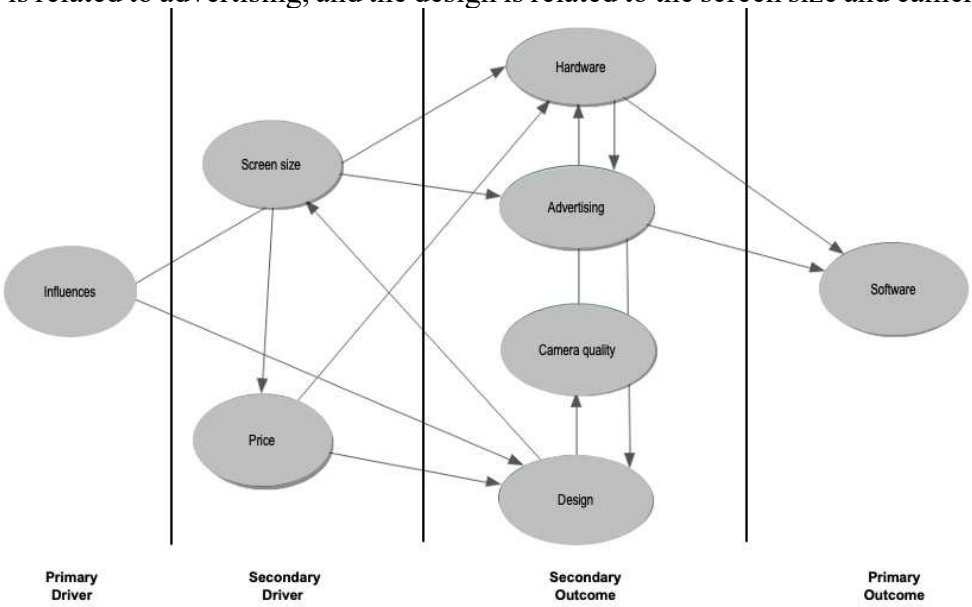

Figure 3. System Influence Diagram (SID) from the focus group.

As secondary results of the SID shown in Figure 3, camera quality is related to hardware, and advertising is related to design and software. In this mental model that emerges from the focus group, no loop between affinities was identified. And, therefore, this mind map was used as a basis for the preparation of the script for individual interviews, explained in the next topic.

3.3 Interviews

Based on the System Influence Diagram (SID), a script was defined for conducting individual in interviews with the objective of obtaining a detailed and exemplified description of each affinity from the participant's individual point of view and the way he perceives the relationships presented in the mental model (Northcutt & McCoy, 2004). The interviews were conducted in March and April 2020, via Skype and Google Meet, lasting approximately 40 minutes per interview. The interviews were recorded and later transcribed in full, totaling 05 hours and 08 minutes of recording and 98 pages of transcription. The results of the interviews are presented and discussed in the following topic. The analysis of the interviews was carried out via axial and theoretical coding, as recommended by the IQA (Northcutt & McCoy, 2004). The Inspiration 9 software was used to systematize the results.

4 RESULTS PRESENTATION AND DISCUSSION

4.1 Price

According to the interviewed consumers, the price affinity is related to the disposition of the monetary value to be paid by the consumers, the payment method (in installments or not), and also to the payment type (credit card, store bill or check) exposed by consumers E2 and E7:

> The fact to be able to pay in installments, the discount they can offer for paying ash or paying in installments, everything. You can have all payment forms you can have, to be able to buy the device (E2).

> When I was about to buy it, I looked more at what was within my budget, no more than I could afford (E7).

This is an affinity already indicated by the literature with a strong influence on the decision-making process for the acquisition of electronic products (including smart phones), as already referred by Löbler et al. (2014), Handler and Chang (2015), Lee and Chen (2016), Montanari et al. (2018) and Pinto et al. (2019). However, this research showed that in addition to the monetary price paid by customers, the possibility of a payment in installments and forms of payment (credit card, checks, store booklet, bank slips, and cash) are also characteristics analyzed by consumers at purchase.

4.2 Screen size

The screen size is related to the cell phone display according to the interviewees. It was identified that these consumers are looking for 5 to 7-inch screens and justify this decision by the options of use that the smartphone offers, such as watching movies, performing banking transactions and sending e-mails. Respondents E3 and E9 stated that:

> I never liked small cell phones, it always bothered me a lot because it was not easy to type or use it, either I saw things very small, it upset me a lot. [...] Like put it in your pocket, put it in your purse, it fits anywhere. So, for me, it was the best because I do not have problems when I type something [...] (E3).

> I like the size of the screen on my phone, it's 6 inches. I use it to watch movies on Netflix, I do banking, and I can also send emails and read books. As I always have my purse, there is no problem taking him from one place to the another (E9).

4.3 Camera Quality

Camera quality is considered to be the pivot in the developed mental model. According to the interviewees, the quality of the camera is fundamental in the purchase decision, since there is the frequent use of this resource (either for recording videos or photos). The description of the importance of this affinity is highlighted by respondents E1 and E3:

> That was the aspect that I took most into account, because whenever you're with friends, or with family when they say, let's take a picture ... Ah, you use the iPhone to take pictures because everyone already has this idea that the iPhone is better for taking pictures [...] (E1).

> Camera quality was the first thing I looked at on the phone. It was the camera quality and all the functions it had, like focus, HDL too. Because it is like that, I truly like taking pictures, or taking pictures of things, of moments, if I am with my friend, I will take a picture [...] (E3).

Camera quality is considered to be the pivot in the developed mental model. According to the interviewees, the quality of the camera is fundamental in the purchase decision, since there is the frequent use of this resource (either for recording videos or photos). The description of the importance of this affinity is highlighted by respondents E1 and E3:

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> take the picture because everyone already has this idea that the iPhone is better for taking pictures [...] (E1).

> Camera quality was the first thing I looked at on the phone. In fact, it was the camera quality and all the functions it had, like focus, HDL too. Because it is like that, I really like taking pictures, or taking pictures of things, of moments, if I am with my friend, I will take a picture [...] (E3).

4.4 Influences

As mentioned by respondents, the influences of friends, family, and famous people impact the decision to buy smartphones. The importance of this affinity can be seen in the following statements:

> I work at the store and there´s a girl who works with me, she bought it and then said that it was very good. It was a new release, it was cheap, then she said it was great and that I needed it, I liked it and bought it (E4).

> Friend`s influences. I had a friend who has the same cell phone as mine, so I liked the model and the quality it had, so I wanted to buy it too (E6).

Influences as a determining attribute revealed by consumers during the focus group were framed as the primary driver, as shown in Figure 3. However, in individual interviews carried out, characterized the affinity influences as secondary results (Figure 4). It is considered that in the first mind map the affinity influences had a greater relationship in the acquisition of the smartphone, and even, the participation of the group in the discussion of affinities may have excited the respondents` opinion. And in the second map, influences did not have a power of the same proportion, as other affinities with greater power of influence, as mentioned earlier. This Research confirms the findings of Pinto et al. (2019), were recently pointed out that the recommendations and recommendations from friends and co-workers influence the smartphone purchase decision.

4.5 Hardware

Another affinity that emerged in the focus group, and according to the interviewees is considered in the purchase decision to buy a smartphone, it is the device's hardware. Understood as the basis for functioning well, the interviewees highlighted:

> Ah, because it is a cell phone that has good RAM. When I tested it at the store, I saw that it responded well, I checked everything. So, everything I could check, I checked, it was a hardware thing that I bought, it attended the needs that I wanted (E2).

> [...] the amount of its memory is sufficient for me, the RAM memory as well as the internal memory, for me this is it (E5).

Previous research has also identified the set of hardware being used in the decision to purchase electronic products, such as the studies by Handler and Chang (2015), Lee and Chen (2016) and Sujata et al. (2016).

4.6 Software

Members of the focus group mentioned software affinities, such as application functionality and operating system security. During the interviews, details about the choice of this affinity in the purchase decision were clarified, such as:

> [...] it is rare to see an iPhone consumer complain that it is crashing, or something like that, you know. Samsung users, on the other hand, complain all the time that it crashes a lot, that the processor gets a little slow when the memory is very full [...] (E3).

> Regarding software matters, what made me choose the cell phone was its quality. Everyone I know never complained about it crashing or anything like that. And it is the same as what I said about the other topic. It never blocked or gave me any problem. I never had to format it (E5).

A study by Salgado (2016) also identified the capacity of the processor, that is, the speed to run programs and applications as attributes that influences the purchase decision. Thus, the findings confirmed the use of software as a determining attribute in the acquisition of smartphones.

4.7 Advertisement

About advertising, smartphone consumers mentioned the main types of advertising that confirms the purchase decision. In the developed mental model during the interviews, advertising appears as an initial result, being understood as:

> I think it influences a lot because as it was a new release, they are always looking to post, advertising, right. I believe it influences a lot. We already see the photo, already like what is on the cell phone (E4).

> The advertising that the brand does is not so important to me. Other attributes catch my attention and influence my purchase decision, such as camera quality, price, and design. For me, advertising ends up being something that I take into account, and I prioritize advertisements that come from reliable sources [...] because not everything on the Internet is reliable (E9).

Advertising in this study is an underlying result, not an attribute used initially by consumers who participated in this research. However, this result confirms the assumptions pointed out by Pride and Ferrel (2016), that the marketing objective is that the product does not need advertising to sell, but that other attributes stand out and that the product can sell automatically.

4.8 Design

In addition to the attributes already mentioned, the design is also a decisive factor to buy smartphones. It came up during the focus group meeting, and the interviews sought to understand the meaning and importance of the design as a decisive factor.

> [...] the iPhone has the dam apple there that catches everyone's attention. But besides that, I think the different colors that Samsung does not offer, at least for me. And it's a different design, for example, the camera has a different format (E5).

> So, at the time it was a different color, everyone was using it, it was a new color. Then I bought more for the color and my cell phone is not square either, it’s kind of rounded, I think that somewhat it caught my attention (E7).

The design was the primary driver in the purchase decision. It is the attribute that exerts a massive influence on the smartphone choice. Löbler et al. (2014), Handler and Chang (2015), Akkucuk and Esmaeili (2016), and Pinto et al. (2019) had already mentioned that design is used in the purchase decision but have not found its influence.

4.9 Combination of Theoretical Coding interviews

During the interviews with Generation Z consumers, after understanding the meaning of each affinity, respondents were asked to complete an ART, based on the possible relationships raised by the focus group. As already highlighted in the focus group procedure, filling in the ART is carried out in a structured manner, permeating all affinities and relationship possibilities (A → B - A influences B; B → A - B influences A; or <> there is no relation between affinities.)

It is worth mentioning that when filling in the ART during the interviews, consumers did not have access to the ART previously answered in the focus group. The objective of this new filling without access to the previous one follows the precepts of the method proposed by Northcutt and McCoy (2004), which is to perform the triangulation of the data. In the development of the new mind map (SID) from the interviews, the same data analysis procedure mentioned above (in the focus group) was performed, resulting in figure 4.

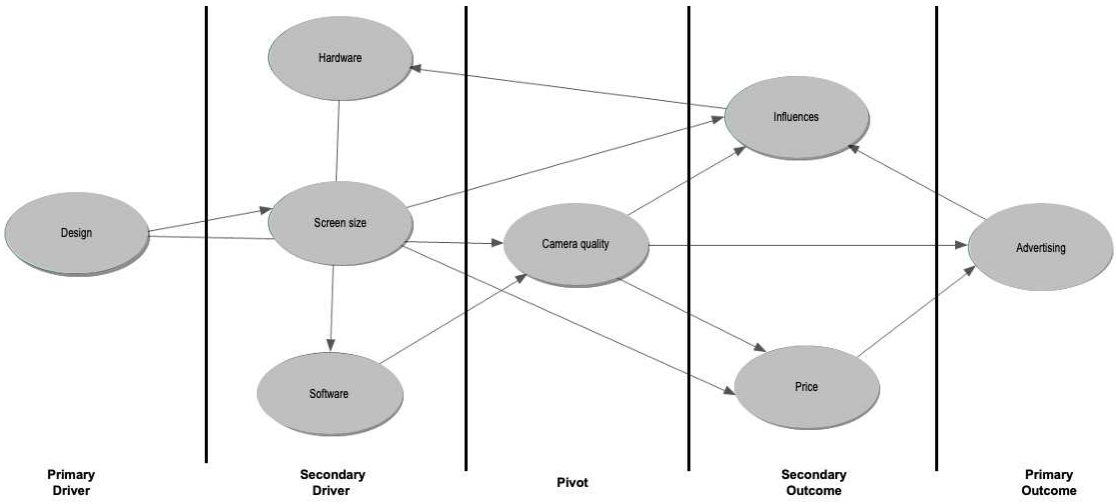

Figure 4. System Influence Diagram (SID) elaborated from in interviews.

Figure 4 shows the relationships of affinities. The primary design driver has two influence arrows, starting with screen size and camera quality. In regards to these relations, the interviewees pointed out that:

> I think the design is related to the screen size, because I imagine that companies develop a smartphone thinking about a differentiated product, and from that, they will create a screen (display) according to the design of the device. However, the focus should be on differentiated models to draw customers' attention (E9).

As secondary drivers, there is the affinity of screen size, hardware, and software. Screen size has two influence arrows, starting with the price and also for influences. Regarding these relations, it was identified that:

> The screen size also shapes the cost of the cell phone, right? [...] because cell phones are increasingly coming with big screens and higher prices. I also think that companies are innovating and presenting better retinal screens, and I do not know what else ... and this will influence the price for us (E1).

> Ah, I think the screen size is related to influences. Like, if Samsung launches a new cell phone with a different screen from the competition, famous people will try to influence us to buy it ... if a friend buys and likes it, he will want you to buy as well (E7).

As for the hardware affinity, there are relationship arrows for software.

> I imagine that the hardware being the basis of the smartphone, influences the software. I think that if my phone doesn't stall, I can download a lot of Apps, the battery lasts for a long time, so I imagine that its hardware is good (E3).

As a secondary drive, the software is related to camera quality.

> If it has good software, the camera is usually very good too, it has good quality (E3).

> The phone that has good software, the camera doesn't lock, right? A good software also makes the videos look good, without crashing, with good quality ... I think the software has great influence on the quality of the smartphone's camera (E7).

The model's pivot affinity is the camera quality. In this affinity, there are arrows of influence for price, advertising and influences.

> I think the better the camera, the higher the price will be (E3).

> The camera quality has a relation with the ad. If it has a very good câmera, I can advertisse it (E3).

> The quality of the camera is related to influences because, if my smartphone has a good camera, it can take good photos and make good videos, surely people will recommend this smartphone [...] whether they are famous on Instagram, or friends, influences will certainly exist (E6).

Price affinities and influences emerged from the interviews as secondary results. The price attribute has an influence arrow for advertising only.

> Depending on the cell phone price, companies invest in various types of advertisement. For example, if Apple launches a new iPhone, the company can invest heavily on advertisements, since it is a release of a product from a known brand (E9).

And also, the influences (from friends, famous people, family) were identified by consumers having to do with the smartphone's hardware. It was understood that consumers who have the power to influence other people, also seek to convince them about the hardware differential that the smartphone has.

> Anitta for example, when she appeared on TV with a Samsung phone and saying good things about the operating system, security and that the phone did not stall, she certainly influenced me to buy a Samsung due to its hardware, I think that's it (E4).

Finally, the primary result of the interviews was advertising. The survey participants understand the importance of advertising as a final stimulus for the purchase decision, taking into account other attributes initially when choosing the smartphone.

> Advertising is a final stimulus. When I'm in doubt between two cell phones, I see which advertisement convinces me the most ... who are the famous people who are in the advertisement, and from that, I decide which smartphone to buy (E3).

Simulating a smartphone purchase decision process by generation Z consumers, what would be the determining and priority attributes of this decision? This questioning has not been answered in detail by the literature, which is the main contribution of this article. Studying generation Z consumers who were born in the world of technology and remain connected with using an innovative method is already a significant contribution. On the other hand, no studies

have analyzed the determinant attributes of the acquisition of smartphones jointly, only analyzing them in isolation. This research contributes theoretically by analyzing the eight attributes considered decisive for generation Z consumers, their interdependence relationships, and influences from the construction of their mental models.

As for inadequateness, previous research neglects that the purchase decision is made only after the formation of a perception (Handler & Chang, 2015; Pinto et al., 2019; Kim, Lee & Lee, 2021), in which the mental model is created to represent the reality perceived by consumers (Lee & Chen, 2016). Studies point to decisive attributes in the purchase decision process, such as Innovation (Akkucuk & Esmaeili, 2016), Durability / Lifetime (Handler & Chang, 2015; Pinto et al., 2019), Usability (Pinto et al., 2019), Technology, Operational System (Handler & Chang, 2015; Lee & Chen, 2016; Sujata et al., 2016), and Status (Handler & Chang, 2015). However, if the literature analyzes these attributes in isolation, it neglects a relationship of interdependence and influence between these determining attributes for decision making.

5 FINAL CONSIDERATIONS

This research aimed to analyze the purchasing decision attributes of generation Z consumers based on the construction of the mental model in the smartphone purchase decision. It is noteworthy to say that the objective has been achieved.

Auger et al. (2010) in their research, concluded that brands play a fundamental role in consumer decision making and help to reduce indecision. Recently, the research found that in South Korea the brand is the most important attribute of the smartphone and Apple is the strongest in brand loyalty (Kim, Lee, & Lee, 2020). On the other hand, the same survey found that Samsung's brand loyalty is lower than Apple's, but the brand's interest is higher. Contrary to these findings, in this research, the brand was not mentioned by consumers as a determining attribute in the purchase decision. Even though consumers mentioned the importance of the brand in some moments of the interview, this was not an affinity raised by them. However, during the interviews, consumers sometimes mentioned the importance of the Apple brand and the status attributed to it, corroborating the findings of Kim et al. (2020).

The use of mental models as a way of portraying the results identified during the research corroborates the findings by Pryor et al. (2016). In this research, based on the information collected from the interviewees, two mental models can be constructed, one being a shared mental model (from the focus group) and another individual mental model (elaborated from the interviews). It should be noted that the same people participated in the construction of both models; however, they are different mental models. Pryor et al. (2016) revealed that the models can be shared in groups, and these groups affect the behavior aspects and information processing, consequently, the models are influenced during the construction by the group members. Recently, Behling (2019) also used mental models as a way of retracting the results of research carried out in the area of Administration, using the same method as in this research.

As the central results in the mental model established through the ARTs from the focus group, no affinity was identified as the pivot of this purchase decision process. Influences were verified as affinity with greater decision power (primary driver) and software as affinity considered as a primary result (less decision power). In addition to influences, affinities such as screen size and price were considered determinants in consumers' decision to buy a smartphone. Later on, in data collection through interviews, the data was completely different. In this mental model, the design was the main determining attribute, camera quality as the pivot of this decision-making process, and advertising as the primary result (exercising little power in the purchase decision). During the execution of the focus group and the in interviews, it was possible to understand the construction of the decision-making process and the affinities that have the greatest influence on the decision to buy smartphones from generation Z consumers.

One of the main strengths of the method used in this research (Interactive Qualitative Analyzes) is that it provides a clear and structured path for conducting qualitative research that places the participant at the center of the research, and the researchers act by simply guiding the process (reduces the power relations between researcher and participant). This makes it possible for the participants' opinions to emerge about "how" and "why" they chose certain attributes in their smartphone purchase decision.

This study contributes to the theories of consumer behavior, specifically about the purchase decision, by discussing key attributes in the acquisition of smartphones, and at the same time, it presents a difference in the construction of mental models when developed in group and individually. Another contribution is the identification of how the attributes are related in the formation of a perceptual model for making purchase decisions, a contribution that has not yet been evidenced. Technology-based and highly involved products are products that have a significant share in the Brazilian and worldwide market, and an understanding of how to purchase these products is necessary. Still, findings from this research illustrate the importance of the product selling itself without the need for excessive advertising, but rather, information about the product benefits. The construction of the mental models presented in this research is also significant since it opens new paths for quantitative studies that pursue the validation and confirmation of these variables.

The managerial contribution of this research is in the identification and prioritization of certain affinities mentioned by consumers that are essential in the purchase decision. Company managers that commercialize smartphones may benefit from having knowledge of this research, thus being able to outline strategies and sales forces directed to the determining attributes raised in this research.

There are limitations to this research that should be highlighted. The study is limited in its context, as it only provides information from the perspective of generation Z consumers in a given geographic region. Taking into account other consumer profiles of the same generation (residing in other regions, states, and countries), different ideas can be obtained. The results of this research cannot be generalized, since they present only the consumers` opinion of this research. In this sense, other similar qualitative studies need to be carried out to validate or contradict these findings.

New surveys can also be carried out with the application of the IQA method to other generations of consumers and the performance of quantitative surveys to indicate the confirmation of the results presented here. New research with other types of electronic equipment (such as notebooks, tablets, TV's and others) is valid. Other Management research contexts can also use this method, such as the area of Entrepreneurship, Human Resources, and studies involving Business Strategies. Researches related to other processes involving the purchase decision are also appropriate, such as the search for information, the analysis of options, and also the correct way to dispose of electronic products. New research methods present significant theoretical contributions, and for this reason, their use in future research, such as IQA, fuzzy analysis, and experiments in the area of consumer behavior, are appropriate.

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