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Instagram Algorithm Changing the Cultural Identity

The impact of the content recommended by the Instagram Algorithm
on the of users' cultural identity formation

Júlia Isabel Andrade Faria

Master Thesis

presented as partial requirement for obtaining a master's degree in information management, with specialization in
Business Intelligence

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Instituto Superior de Estatística e Gestão de Informação

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STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism, any form of undue use of information or falsification of results along the process leading to its elaboration. I further declare that I have fully acknowledged the Rules of Conduct and Code of Honor from the NOVA Information Management School.

[Lisbon, July]

ABSTRACT

Algorithms can be seen as mere calculations and machine learning models. However, the algorithm's recommended content allows the interconnectivity and exchange of perspectives and values of individuals from all walks of life. Content filtering is becoming increasingly powerful on social media, influencing users' perspectives, identity, and culture. As acknowledged, culture is presented in all ways, including online platforms, which are not static and evolving through time and space. In our research, we aim to fill this gap by providing a comprehensive framework of the impact of Instagram algorithm recommendations, since it is one of the most used social media, on user cultural identity formation. This study used an online survey (n=181) exploring six constructs: content recommended by the algorithm, global identity, cultural identity, average time of use, type of content the users engaged with the most, and power of the algorithm based on statements from strongly disagree to strongly agree. The findings highlight the impact of the algorithm recommendations on users' cultural identity formation. On the other hand, the mediator (global identity) and the moderators (type of content, average time of use, power of algorithm) do not support the relationship algorithm recommendations vs cultural identity, which leaves space for exploring other constructs and interactions or the same constructs in a different data sample. This research contributes to the existing algorithm and culture identity literature, merging two distinct yet related concepts and implications on the algorithm consumer culture and the consumer culture theory. In addition, the study has a practical impact on the social aspects arising from the relationship between social media and identity.

Keywords

Cultural identity; Algorithm; Global identity; Instagram; Type of content; Time of use; Content recommended

Sustainable Development Goals (SDG):



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LIST OF ABBREVIATIONS

CI Cultural Identity

GI Global Identity

1. INTRODUCTION

Algorithms are mathematical calculations that can be defined as computational recipes, that from various steps of instructions lead to desired outcomes (Gillespie, 2014). Denoting that an algorithm is a set of instructions for how a computer should accomplish a task (Donovan, Mathews, Caplan, & Hanson, 2018), notwithstanding algorithms are not merely about calculations and models anymore. Through the networked channels, a new digital storage of information as well as the creation of technology communities, emerge deriving from online behavior (Zwick & Denegri-Knott, 2009). Based on real-time inputs, machine learning systems adjust their models according to the users' interactions and expectations within digitalized markets (Gay, Hall, Janes, Mackay, & Negus., 1997) inducing an algorithmic articulation which the articulation happens, and power operated, which it can be resisted and eventually affecting their operations (Airoidi & Rokka, 2022). The content recommended by the algorithm allows the interconnectivity and exchange of ideas, values, and views of individuals from diverse cultural strata (Sutrisno, 2023). Since most content-filtering algorithms apply on social media (Airoidi & Rokka, 2022), they influence the users' experiences, perceptions, and ideas.

Analyzing the spectrum of social media platforms, Instagram is one of the most used social media platforms where around 500 million users interact with content daily (Bhaskar & Bansal, 2022). Instagram's algorithm is a complex and evolving system designed to determine which posts users see in their feed (Sana Saima, 2023), as the result provides the posts based on various factors such as likes, comments, and shares (Bhaskar & Bansal, 2022). Those interactions can be realized through social media, which potentially the exchange of ideas and values and therefore, impacts cultural identities, having the possibility to urge new foundations of thinking, feeling, and perceiving cultural identity (Sutrisno, 2023).

Global flows have created opportunities for connections between individuals from different walks of life (Burgh-Woodman, 2014) leading to a phenomenon where individuals can access and interact with and be influenced by a wide of ideologies and cultural perspectives (Sutrisno, 2023). Hence, people are moving towards nomadism and individualism and not belonging to a particular nation (Green, 2020, p.5).

Individuals who identify with global ideas are concerned about global events and embrace the similarities with people around the world (Meulenaer, Dens, & Pelsmacker, 2015; Steenkamp & Jong, 2010; Strizhakova & Coulter, 2010), meaning views on globalization depending on the individual, their experiences and where they are in the world (Jaafar, et al., 2019) which can lead to a global consumer culture that can be explained as a social arrangement which the relations between culture and social resources are globally (locally) conceived (Steenkamp, 2019). Social media, honing Instagram, can impact the user's values and feel a change in their identity. A society's culture shapes the individual and their group identity, by influencing how individuals interact with each other and with their surroundings (Sutrisno, 2023).

The term "identification" can be a bridge to connect between social identity and cultural identity, meaning identify oneself and identify with others (Hauser, 2009). As an individual

identifies with diverse groups, people tend to “*experience, enactment, and negotiation of dynamic social identifications by group members within particular settings*” (Chen & Lin, 2016). Cultural identity is not a static process, but a developing process (Yeboah- Banin & Quaye, 2021). It should be understood as a constant formed anew by related to several possible group norms and values. Additionally, cultural identity can be defined as a global or local community and/or a mix of both (Strizhakova & Coulter, 2019; Westjohn, Singh, & Magnusson, 2012). To the best of our knowledge, this is among the first studies to focus on the impact of the content recommended by the algorithm on the cultural identity formation of the users, within the context of Instagram since is one of the most popular social network platforms (Lua, 2023). There is a need for a deeper examination of how algorithms shape cultural identity on the individual and, consequently, on the community level. This study answered the research question of how Instagram's algorithm recommendations influence users' cultural identity formation by evaluating the mediating role of global identity level in the relationship between the content recommended by the algorithm and cultural identity and the moderator's effects of the average time of use, and the type of content the users engaged with the most. Furthermore, explores how it conditions cultural changes and trends related to the global identity of the users on Instagram and their awareness of the power of the algorithm.

2. LITERATURE REVIEW AND HYPOTHESIS

2.1. ALGORITHM CONTEXT

An algorithm is a set of procedures and calculations for transforming input data into a desired output (Gillespie, 2014) they are “sets of rules defining sequences of operations” (Gillespie, 2014). It is defined as the ability of a system to learn from data to reach predetermined goals such as social and organizational (Mikalef & Gupta, 2021). Furthermore, algorithms can be considered as a “socio-technical system” that can impact how we perceive both online and offline reality, and how we interact with each other (Klug, Qin, Evans, & Kaufman, 2021). Additionally, through algorithms we can create a “digital identity” (Cheney-Lippold, 2017) through our online interactions, content preferences, online behavior, and personal information we share (Klug, Qin, Evans, & Kaufman, 2021).

Thus, machine learning systems constitute “powerful social actors that open possibilities, limit agency” (David Beer, 2013) and shape perceptions. Those AI technologies play a role in everyday life as a sort of “technological unconscious” (Beer, 2009).

While social media platforms are using these AI technologies, our online profiles are replications of our behaviors and habits (Koçak & Oyman, 2012). From the spectrum of all the social media, Instagram is one of the most used social media platforms with more than 500 million users interacting every day (Bhaskar & Bansal, 2022). Regarding the “socio-technical systems” (Kitchin & Lauriault, 2014; Siles, Segura-Castillo, Solís, & Sancho, 2020). Algorithm is programmed to show the users the content that is most significant for the users aligned to their preferences, the hierarchy of posts on the feed based on diverse factors such as users’ interests, timeliness of the post, engagement, users’ past behavior and the relevance of the content (Sana Saima, 2023).

As a result, algorithms adjust their models accordingly to the users’ expectations and desires, e.g.- more videos of cats, and fewer posts of politics (Fourcade & Johns, 2020) since users “iteratively influence algorithmic behavior through their implicit and explicit feedback” (Airoldi & Rokka, 2022). Therefore, the type of content a user engages with will recursively influence the type of content they will encounter in the future (Bucher, 2012).

2.2. CULTURAL IDENTITY CONTEXT

Cultural identity can be described as the experience and perceptions of dynamic social identifications (Chen & Lin, 2016) referring to the perceptions of oneself which therefore are based on a symbolic group or community (Yeboah-Banin & Quaye, 2021). In addition, cultural identity theory defines the extent to which individuals embody the values and attitudes of another cultural group to which they are self-connected (Jensen, 2003). If so, individuals identify or desire acceptance with multiple groups, and so people often tend to experience not just one cultural identity but multiple ones (Chen & Lin, 2016) which transcends time,

place, history and itself (Green, 2020, p.5). By means that cultural identity is dynamic and can change over time (Sutrisno, 2023). Cultural identity is essential to one's self-concept, and it can become salient when one must adapt to different cultures (Hauser, 2009).

Subsequently, cultural identity has evolved, and today it is not just formed through a dynamic between traditions, but it is also formed through the influences of modern media (Sutrisno, 2023), which encompasses how individuals involve themselves in integrating with diverse media content (Georgiou, 2010).

In social media platforms, the work on the extended digital self (Belk, 2013) presents new means and potential the possibility to individuals to extend their identities (Kozinets, Patterson, & Ashman, 2017), providing a chance for self-expansion and self-extension (Airoidi & Rokka, 2022), and so an opportunity to extend their cultural identities (Sutrisno, 2023). This new information and social networks build a relationship with local contexts, impacting cultural identities, lifestyles, and stereotypes (Schmidt, 1999).

The algorithm systems depend on cultural assumptions inscribed in the training data that constitute the models (Neyland, 2019; Benjamin, 2019). Algorithm influences "how culture is seen by acting curators and gatekeepers". Moreover, content recommended by the algorithms makes use of these AI technologies to track the patterns of users' behavior. For instance, Instagram's algorithm is a complex evolving system crafted to ascertain the content that appears in users' feeds based on different factors (Airoidi & Rokka, 2022). Formally:

H1: The content recommended by Instagram's Algorithm has a positive impact on users' cultural identity formation.

2.3 THE MEDIATION ROLE OF GLOBAL IDENTITY

Global identity can be defined as where individuals identify with a global lifestyle and feel they belong to a global community, instead a local identity is where the individual's identity the local ways of life and to the local community (Tu, Khare, & Zhang, 2012). Yet, individuals can embrace both local and global identities, which means global identity drives global preferences (i.e. Worldwide, universal values) while a local identity drives local preferences (i.e. national, tradition)(Yeboah-Banin & Quaye, 2021), proposing the construction of personal identity (Balabanis, Stathoupoulou, & Qiao, 2019) as well as the mix of both and local identities (Strizhakova & Coulter, 2019; Westjohn, Singh, & Magnusson, 2012), given the situation or context (Steenkamp, 2019). In addition, global identity can be understood as people with a strong sense of cosmopolitan values (Yeboah-Banin & Quaye, 2021), giving a willingness to explore and learn from different cultures (Levy, Beechler, Taylor, & Boyacigiller, 2007). Even though, the identity can be characterized through consumption (Yeboah-Banin & Quaye, 2021). Consumption is not only tangible products, but also anything that can be "consumed", such as images, symbols, and lifestyles (Arnould & Thompson, 2005). People can express their identity through acquiring signs and symbols (Westjohn, Singh, & Magnusson, 2012),

which means that who you are impacts what you will consume (Yeboah-Banin & Quaye, 2021) that develops attitudes and maintains behavior that reinforces people's identity (Strizhakova & Coulter, 2013; Strizhakova & Coulter, 2019; Westjohn, Singh, & Magnusson, 2012). Essentially, self-identity is a construct of how individuals make sense of the world (Oyserman, 2009).

This phenomenon leads to globalization which "is a process that contributes to human interaction in various fields" (Jaafar, et al., 2019, p.1). It is also understood as a social process where geographical boundaries become irrelevant to cultural and social views (Giddens, 1990; Waters, 1995). A way of spreading culture and another way of thinking (Scholte, 2005). Although, views on globalization depend on the individuals' experiences (Prilleltensky, 2008).

Subsequently, global identity can impact one's culture (Green, 2020, p.5), sense of belonging and choices that drive people with those of similar attitudes (Hsieh, 2005). Attitudes are fundamental to guiding people's thoughts, feelings, and actions (Steenkamp, 2019). Shared experience influences the individuals' perception as they view themselves as unique from another culture (Green, 2020).

Global consumer culture can be defined as the relationship between the cultural and socially significant ways of life and the symbolic and material resources that are global and/ or locally conceived (Steenkamp, 2019), aspired to global ideas by embracing similarities with people around the world and worried about global issues (Meulenaer, Dens, & Pelsmacker, 2015; Steenkamp & Jong, 2010; Strizhakova & Coulter, 2013). Global identity is a flowing essence (Der-Karabetian & Ruz, 1997), which makes individuals more open to accepting new ideas. On this basis, "Global Identity captures the degree of emotional and psychological investment everyone has to the global community" (Green, 2020, p.5), which is enabled by digital media (Airoidi & Rokka, 2022).

The increase rapid of digital technology enables individuals and organizations to rely on their decisions on algorithms (Mahmud, Islam, Ahmed, & Smolander, 2022). Besides, algorithms replicate social values that create new guides and assumptions for what is important in each context (Donovan, Mathews, Caplan, & Hanson, 2018). Furthermore, emancipate individuals from boundaries (social, geographical) by creating value (Bardhi & Eckhardt, 2017; Bardhi, Eckhardt & Arnould, 2012), referred as the "algorithmic culture" (Striphas, 2015), which is an evolving system of meaning that impact how people make sense of their lives, and in consequence in their identities (Airoidi & Rokka, 2022).

Forces of globalization are leading to cultural homogenization where people around the world are adopting global behaviors and preferences instead of traditional local cultural perspectives (Steenkamp, 2019), giving opportunities to individuals to access and engage with various cultural perspectives (Sutrisno, 2023). These changes in interplay between the local and the global influences (Terkenli & Georgoula, 2021) opened cross-cultural interaction and information dissemination (Sutrisno, 2023).

The emergence of a socio-technological system (Kitchin & Lauriault, 2014; Siles, Segura-Castillo, Solís, & Sancho, 2020) establishes a relationship between local contexts and global influences which impacts cultural identities (Schmidt, 1999). Formally:

H2: Users' global identity mediates the impact of the content indicated by the Instagram algorithm on the cultural identity formation of the users.

2.4 THE MODERATOR ROLE OF TIME OF USE

Over the last ten years, social media has evolved into a significant aspect of our lives (Valkenburg, 2021). The increased use of social media has become a global phenomenon, becoming one of the main activities that is enacted on the internet due to the fast development of technology used for communication with various sources (Elkaseh, Wong, & Fung, 2016).

As an effect of “a different culture has emerged with the increase in social media users”. Social interactions have transitioned into a digital era, where social connections are maintained through social media, while in-person interactions are decreasing (Ngernyuang & Wu, 2020). This phenomenon enables users to build virtual communities by sharing information, ideas, and beliefs (Aydin, Uray, & Silahtaroglu, 2021).

In relation to Instagram, over 95 million photos and videos are shared daily (Chaffey, 2016; Nieto, Hernández-Maestro, & A.Munoz-Gallego, 2014) and in 2020, the daily number of shared stories has reached around 500 million (Aydin, Uray, & Silahtaroglu, 2021). Those immense interactions are part of the users' lives. It is indisputable that social media has a huge impact on the individual (Yohanna, 2020).

In fact, each social media user spends on average, 2h25 min per day scrolling through their social media (Aydin, Uray, & Silahtaroglu, 2021). The ease of finding various sources is what makes users stimulated and making social media a primary need (Yohanna, 2020). Further, this makes us question if we are truly emancipated through the content recommended by the algorithm which is optimally activated by Instagram images (Kozinets, Patterson, & Ashman, 2017). Formally:

H3: The relationship between the content recommended by the Instagram Algorithm and the Users' cultural identity formation is strength by the time of use.

2.5 THE MODERATOR ROLE OF USERS' ENGAGEMENT

Users' engagement can be defined as how users react to a social media post (Aydin, Uray, & Silahtaroglu, 2021). A social media post engagement can be reflected in the number of likes, comments, shares (Lohtia, Donthu, & K.Hershberger, 2003), post frequency and timing. Users' engagement is linked to the arising of new technologies such as algorithmic recommendations that (Aydin, Uray, & Silahtaroglu, 2021) impact the users' information behavior (Klug, Qin, Evans, & Kaufman, 2021). The notable influence of videos, images, post frequency and

interactivity on engagement levels indicates the effectiveness of social media according to the users' responses (Aydin, Uray, & Silahtaroglu, 2021).

Therefore, users' engagement through social media allows influencing individuals' emotional and cognitive through social media posts (Gutiérrez-Cillán, Camarero-Izquierdo, & José-Cabezudo, 2017) that could be characterized by interactivity (e.g. links, hashtags, post frequency and timing of the posts), post formats (images, videos, texts) (Vries, Gensler, & Leeflang, 2012; Schultz, 2017) and vividness on engagement (Aydin, Uray, & Silahtaroglu, 2021). Besides, social media platforms are a place that allows their users to share and interact with content (Ngernyung & Wu, 2020).

Thus, online engagement is reflected through liking the posts, commenting, expressing opinions, and sharing with others to reach out to more people (Pino, et al., 2019). Additionally, social media enables individuals to share content in a fast, efficient way and real-time revolutionizing the way we communicate and engage in various activities. Informative content provides value to the users by proving to be a successful way of increasing user interactions, and in consequence users' engagement (Luarn, Lin, & Chiu, 2015; Cvijik & Michahelles, 2013; Aydin, Uray, & Silahtaroglu, 2021; Rebecca Dolan, 2019). Also, entertaining content entices the users by offering value. Various types of content such as informative, entertaining, promotional or advertising have an impact on engagement (Aydin, Uray, & Silahtaroglu, 2021) intending to provide value by using motivation and accessing information (Lin & Lu, 2011; (Park, Kee, & Valenzuela, 2009). In addition, social media through content could foster debate, disintermediation, and changing users' perceptions and opinions (Bessi, et al., 2015).

Therefore, the content type is considered a crucial factor in users' engagement (Vries, Gensler, & Leeflang, 2012; Schultz, 2017; Cvijik & Michahelles, 2013). As a result, post content is embraced by the users who share and it increases the interaction by reaching out to more users (Luarn, Lin, & Chiu, 2015; Bonsón & Ratkai, 2013). Content recommendations started to link with digital footprints of online behaviors (Airoldi, 2021). Algorithms are based on the user's behavioral data which provide ranking and filtered digital content through real-time procedures (Zuboff, 2019) which are becoming more efficient, sometimes overcoming humans (Mahmud, Islam, Ahmed, & Smolander, 2022).

As follows, higher engagement leads to a trending post through the algorithm in social media platforms. (Klug, Qin, Evans, & Kaufman, 2021). Instagram's algorithm ranks the content based on how probable the users' engagement is constructed through user behavior patterns (Saima, et al., 2023). Instagram boasts one of the highest levels of user engagement with a post among the social media platforms (Aydin, Uray, & Silahtaroglu, 2021).

The importance of interactivity with the content is due to the response to algorithms' feedback (Mahmud, Islam, Ahmed, & Smolander, 2022). The interconnection processes that involve the creation, circulation and consumption of cultural identities and representations (Airoldi & Rokka, 2022), engenders a transformation in the way individuals engage with the

content, inescapable in the manner that cultural identity is constructed and articulated (Sutrisno, 2023). Formally:

H4: The relationship between the content recommended by the Instagram Algorithm and the Users' cultural identity formation is moderated by the type of content the user engaged with the most.

2.6 IMPACT OF THE GLOBAL IDENTITY ON TYPE OF CONTENT

Effortless access to different types of content encourages new ways of exchanging cultural interactions (Sutrisno, 2023). There is an emergence of global cultures as the example of yoga which incorporates both eastern and western elements (Askegaard & Eckhardt, 2012; Coskuner-Balli & Ertimur, 2016) and the urge for new subjectivities such as nomadic identities which is a result of an exposition of cosmopolitan instead of nationalism values (Demangeot & Sankaran, 2012; Emontspool & Georgi, 2017) it creates opportunities for freedom and the emergence of new social elites (Bardhi, Eckhardt & Arnould, 2012). Additionally, the growth of social media platforms (Instagram) has resulted in a rapid expansion of content (Mahmud, Islam, Ahmed, & Smolander, 2022), which allows their users to share ideas and thoughts (Dixon, 2024), impacting how people make decisions (Al-Ghaith, 2015). Resultantly, the continuous presence of foreign images and symbols in social media (Instagram) erodes national identity by showing images of the world that contradict one's cultural context. Formally:

H5: Users' global identity influences the type of content the users engage with.

2.7 THE MODERATOR ROLE OF POWER OF THE ALGORITHM

On the other hand, underwhelm or disenchantment about the capability of the algorithm leads to algorithm disillusionment. The phenomenon of algorithm disillusionment is related to the machine heuristic (Sundar & Kim, 2019), which means users overestimate the capabilities of the technology tends to compare with human behavior as a reference (Buchi, Fosch-Villaronga, Lutz, Tamo-Larrieux, & Velidi, 2021). In contrast, the Algorithm has a powerful impact in what the content that users engaged with the most, which can affect users' self-perceived identities and personal values (Ionescu & Licu, 2023). Formally:

H6: The relationship between the content recommended by the Instagram Algorithm and the Users' cultural identity formation is strength by the believe of the power of the algorithm.

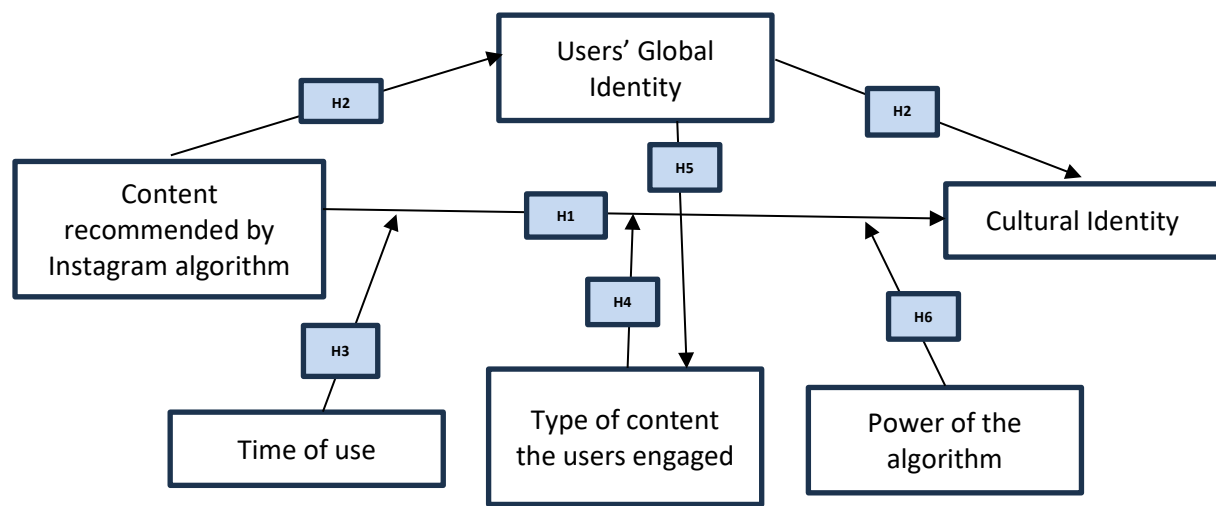


Figure 1. Conceptual Model

The conceptual model presented above supports this research by examining the interrelationships among the different constructs that affect user cultural identity changes. In this conceptual model, the Global Identity of the users is the mediator between the relationship of content recommended by the algorithm and the users' cultural identity formation. It has three constructs that contribute as moderators: the average time of use, the type of content the user engaged with the most, which includes four distinct choices ranging from entertainment to food content to constitute culture (Steenkamp & Jong, 2010; Holt, 1998), and the power of the algorithm which is measured based on how the participants perceive the algorithm's strength.

METHODOLOGY

3.1 OVERVIEW

In this research, we explored the impact of the content recommended by the Instagram algorithm on the users' cultural identity formation. We assessed if this phenomenon is mediated via the users' global identity and moderated by how much time they spend on Instagram daily, the type of content they engage with the most, and how they perceive the power of the algorithm. This study follows a quantitative analysis using the SMART-PLS system to analyze the relationship between the variables in the model, thereby contributing to a better understanding of the impact of the Instagram Algorithm on the users' cultural identity formation and carrying out all the statistical analysis together with the SPSS system. The data was obtained from an online questionnaire created in Qualtrics, and the final sample is 181 participants who use Instagram in the EU+UK.

3.2 MEASURES

This study uses an approach to test the hypothesis that the content recommended by Instagram's Algorithm impacts users' cultural identity formation. We adapted the (Steenkamp & Jong, 2010), adding the perspective of (Holt, 1998) on the analysis of the type of content adapted in terms of the content type of Instagram (i.e. Instagram reels, videos) and users' engagement (i.e. likes, comments, shares). The scale includes four domains central to the consumer culture (lifestyle, entertainment, foods, and clothing). Accordingly, to each domain (i.e. "I enjoy entertainment content that I think is popular in many countries around the world more than traditional entertainment that is popular in my own country".) Additionally, we asked the participants for a closed format choice where the type of content they are most engaged with. This extends our findings by evaluated the mediator role of users' global identity. We hypothesize that in contexts where the users' global identity is directed to globalism, it will result in changes in their cultural identity. We adapted the measures of (Zhang & Khare, 2009) by analyzing if a user has a more global or local perspective. In addition, we aim to obtain evidence of whether global identity can influence the type of content users interact with. To support this evidence, we adapted the (Özsomer, 2012) scales (i.e. Global perspective – "I am willing to engage with international brands content"). Measure the users' global cultural identity in terms of local/global perspective, we adapted the organization of value systems in three levels adapted by (Steenkamp & Jong, 2010), adding the value types from the (Schwartz, 1992) value theory.

Furthermore, we explored the impact of the content recommended by the Instagram Algorithm, moderated by the time of use. By saying this, we assessed if more time spent on Instagram strengthens the impact of the content recommended by Instagram on the cultural identity of the users. In addition, we testified the power of the algorithm moderator's role in

the effects of the users' cultural identity formation in the context of Instagram by understanding how the participants perceived the strength of the algorithm.

3.3 PROCEDURES

We obtained evidence for our prediction that the content recommended by the Instagram algorithm impacts the users' cultural identity formation. We explored if this phenomenon is mediated via users' global identity and moderated by how much time they spend on Instagram daily. This study extends our findings by testing the moderating role of the type of content the users engaged with the most and enhancing the impact of the power of the Instagram Algorithm on the users' cultural identity formation. In addition, we obtained the percentages of gender, age, and education of the participants. The constructs were measured by applying a descriptive analysis, where we utilized measures of central tendency such as mean and median and measures of dispersion such as mean, standard deviation, and Cronbach alpha to summarize and describe the data to understand the predominant variable using the system of SPSS.

This study follows a quantitative analysis in which we used the SMART PLS system to analyze the relationship between the variables in the model, thereby contributing to a better understanding of the impact of the Instagram Algorithm on the users' cultural identity formation and carrying out all the statistical analysis. Furthermore, we assessed the measurement model and analyzed the model fit, VIF, factor Loadings, Cronbach's alpha, composite reliability, average variance extracted, Heterotrait-monotrait ratio (HTMT) and cross-loadings. To support the evidence of the model, we tested the assumption between the independent (users' cultural identity formation) and dependent variables (content recommended by the Instagram Algorithm, users' global identity, average time of use, type of content the users engaged with the most, power of the algorithm) through the structural model analyzing the hypothesis of our conceptual model assessed the measures of the path coefficient, sample mean, standard deviation, t-statistics, and p-values.

RESULTS AND DISCUSSION

4.1 DATA AND SAMPLE COLLECTION

The survey targeted people living in the European Union plus the UK, gathering responses from 192 participants with different answer levels. After excluding all incomplete questionnaires, 181 valid and complete answers were left. This resulted in a final valid response rate of 94%. The final sample consists of 181 individuals – 106 females (59%), 71 males (39%) and four people who are either non-binary/third gender (1%) or prefer not to say (1%). Regarding education levels, 39,2% of the respondents have a postgraduate or master's degree, 30,4% hold a bachelor's degree, 17% are high school graduates, 7,2% have a technical or professional diploma, and the remaining 6,2% have completed some primary school education. Regarding age, 44% of the participants are between 25 and 34, 25% are in the scope of 18 to 24, 13% fall within the 35 to 44 age range, 12% are between 45 and 55, and the remaining 7% are above 55 as shown in Table 1.

Table 1. Demographic Characteristics of Survey Respondents

Category	Subcategory	Number of respondents	Percentage (%)
Gender	Female	106	59%
	Male	71	39%
	Non-binary/Third gender	4	2%
Education Level	Postgraduate or master's degree	71	39,2%
	Bachelor's degree	55	30,4%
	High school graduate	31	17,1%
	Technical or professional diploma	13	7,2%
	Some primary school education	11	6,1%
Age	18-24	45	24,9%
	25-34	80	44,2%
	35-44	24	13,3%
	45-55	22	12,2%
	Above 55	10	5,5%

4.2 DESCRIPTIVE ANALYSIS

A comprehensive descriptive statistics analysis was performed to quantify the constructs in this study. The table below indicates the mean values and the standard deviations for each item linked with the examined constructs. This data is fundamental for analyzing the central tendency and variability of the responses. The mean score of each item provides insight into the participants' answers about the level of agreement regarding the survey statements. A Likert scale was used, which means higher values indicate a more substantial agreement of the measurement of the construct.

Regarding the type of content as an independent variable reflecting the level of interaction or consumption with international content considering the kind of content (food, clothing, entertainment, and lifestyle – e.g. – *“I enjoy entertainment content that I think is popular in many countries around the world more than traditional entertainment content that is popular in my own country.”*), we calculated a mode across these four content types where this new construct was formed "Type of Content"—allowed us to convert the "Type of Content" construct from ordinal to numerical, enabling more significant results. The mean score is 3.5, indicating respondents generally lean towards international content. The standard deviation

of 1.01 suggests a slight variety of opinions among the respondents regarding their consumption and interaction with different types of content on Instagram.

For the Global Identity, the means scores for respective items such as GI connected to the world (4.36), GI global citizen (4.05), GI local events (3.92), and GI my own culture (4.07) indicate that the respondents identify both global and local. The standard deviations for these items range from 0.77 to 0.96, suggesting consistent participant responses.

Regarding the construct of cultural identity, the mean score for the items is above 3.9, reflecting a relatively high level of agreement. The standard deviations for these items vary between 0.83 and 0.93, which implies that the responses are relatively consistent.

Concerning the average time spent on Instagram, the distribution is as follows:

Table 2. Distribution of Time Spent by Participants

Time Spent	Number of respondents	Percentage (%)
Less than 30 minutes	33	18%
Exactly 30 minutes	20	11%
1 hour	43	24%
1 hour and 30 minutes	36	20%
2 hours	33	18%
2 and a half hour or more	16	9%

The mean score, representing the average time spent, is 3.1, equivalent to approximately 1 hour and 10 minutes. The standard deviation is 1.6, which indicates that respondents vary in their average time of use on Instagram.

When it comes to the types of content, the participants showed a diverse range of preferences. 35% of the respondents engage with entertainment content (movies, music), 27% engage with food-related content, 22% with lifestyle content (vacations, sports, photography, video games, painting, and festive days), and 8.3% with clothing content. Additionally, the remaining 7.7% of respondents engage with content that falls outside the suggested content categories. The standard deviation of 1.2 implies that the participants have different choices about the type of content they engage with the most, showcasing the diverse interests of Instagram users.

Table 3. Content Preferences of Respondents

Content Type	Number of respondents	Percentage (%)
Entertainment	63	35%
Food	49	27%
Lifestyle	40	22%
Clothing	15	8.3%
None of the above	14	7.7%

Regarding the belief in the power of Instagram's algorithm, which reflects users' trust in its recommendations, the mean score is 3.8. This indicates a general agreement among the answers regarding the influence of Instagram on users. A standard deviation of 0.91 suggests a moderate degree of consistency in attitude towards the algorithm's power. These findings reassure us of the users' confidence in Instagram's algorithm, a key aspect of their engagement.

Table 4. Mean and Standard Deviation

Construct	Items	Mean	St. Deviation	Cronbach Alpha
Type of content	-	3.099	1.563	-
Global Identity	-	-	-	0.619
	GI connected to the world	4.359	0.764	-
	GI global citizen	4.050	0.965	-
	GI local events	3.917	0.840	-
	GI my own culture	4.072	0.861	-
Culture Identity	-	-	-	0.740
	CI innovativeness	4.006	0.870	-
	CI security	4.006	0.870	-
	CI self-direction	4.050	0.836	-
	CI universalism	3.967	0.922	-
Time of use		3.099	1.563	-
Type of content the users engage		2.762	1.272	-
Power of the Algorithm		3.812	0.909	-

4.3 MEASUREMENT AND STRUCTURAL MODEL

The model employed in this study was tested using a two-step approach to validate the model and verify the relationships between the constructs. The first step was the assessment of the measurement model, which was conducted for reliability and validity analysis. The second step was the evaluation of the structural model, where it was verified and the path coefficients, thus analyzing the relationship between constructs (Anderson, 1988; Hulland, 1999). The methodology applied was a structural equation model (SEM) methodology called

partial least squares (PLS). A PLS-SEM model is designed to assess latent variables in the measurement model and test relationships between latent variables in the structural model (Bollen, 1989).

SMART-PLS (version 4.1.0.2) was used in this study to support the PLS-SEM model. Its adaptability to diverse measurement models without constraints is a key strength, providing reassurance about the suitability of our methodology. This capability is fundamental for the constructs in our model such type of content, culture identity, global identity, time of use and power of the algorithm and so their relationships, and so the relationships between them. Hence, to investigate the relationship between the constructs, avoid collinearity, and reduce measurement errors, PLS was more appropriate than other SEM analysis methods. In this study paradigm, the number of samples was 181 and the number of maximum paths was 6 making compatible with proposed standards and appropriate for PLS analysis.

4.3.1 MEASUREMENT MODEL

The tests for the measurement model include the assessment of the model fit, the reliability of each item, the discriminant validity and collinearity of the constructs. The standardized root mean square residual (SRMR) assesses the model fit by measuring the average difference between the observed value correlation matrix and the model-predicted correlation matrix. The model has an acceptable fit with a SRMR value of 0.095, as shown in Figure 01, below the 0.1 benchmark.

VIF is utilized to identify multicollinearity among the independent variables in regression analysis. All the inner VIF values indicate low to moderately low multicollinearity, which is desirable in a well-fitting model (the structural VIF coefficients should not exceed 4.0) (Jorg Henseler, 2014). A VIF of 1.0 for the path from Global Identity to Type of Content signifies no multicollinearity, as shown in Figure 02, demonstrates that Global Identity influences Type of Content independently, without interference from other variables. Conversely, the path from the type of content the algorithm recommends to cultural identity suggests that different variables may influence these relationships. In contrast, the type of content itself has a direct, independent effect on cultural identity.

Table 5. Model Fit

	Saturated model	Estimated model
SRMR	0.087	0.095
d_ULS	0.591	0.706
d_G	0.153	0.166
Chi-square	162.296	171.197
NFI	0.635	0.615

Table 6. Collinearity statistics (VIF)

	VIF
Type of content recommended by the algorithm	1.000
CI innovativeness	1.675
CI security	1.279
CI self-direction	1.651
CI universalism	1.290
GI connected to the world	1.321
GI global citizen	1.225
GI local events	1.356
GI my own culture	1.354
Average time of use	1.000
Type of content the users engaged with the most	1.000
Power of the Algorithm	1.000

Table 5 provides a detailed overview of the measurement model's assessment, including factor loadings, Cronbach's alpha (CA), and whether all the constructs are above 0.6 in Composite reliability (CR). Composite reliability (CR) measures each construct's internal consistency and reliability, considering items have different loadings. All the factor loadings must be statistically significant and greater than 0.6 for guaranteed reliability (Wynne W. Chin, 1997). For the constructs of Global Identity and Cultural Identity, items were excluded due to their low loadings, apart from Culture Identity – Benevolence and Global Identity – Global events items that were eliminated due to poor statistical significance to the model. For the latent variables to explain more than half of the indicators, the average variance extracted (AVE) should be 0.5 or above 0.4 if the composite reliability is more significant than 0.6 (Lam, 2012), as the literature supports. This ensures convergent validity. Regarding the Culture Identity, the composite reliability and Cronbach's alpha exceed 0.7, and AVE is above 0.5, supporting the use of these constructs in the study. Considering the Global Identity, the composite reliability is 0.6, and the AVE is close to 0.5 (0.47), which is considerably acceptable in the study paradigm. The results for reliability and validity and the factor loadings for the remaining items are shown in Table 7 for the sample.

Table 7. Factor Loadings, Cronbach's Alpha, Composite Reliability, Average Variance Extracted

Constructs	Factor Loadings	CA	CR	AVE
Type of content recommended by the algorithm	1.000			
Culture Identity		0.740	0.761	0.563
CI innovativeness	0.787			
CI security	0.664			
CI self-direction	0.830			
CI universalism	0.709			
GI connected to the world	0.776			
GI global citizen	0.649			
GI local events	0.636			
GI my own culture	0.658			
Average time of use	1.000			
Type of content the users engaged with the most	1.000			
Power of the Algorithm	1.000			

All factor loadings are observed to be higher than their corresponding cross-loadings, which indicates discriminant validity. Discriminant validity detects the level of discrimination between the constructs. It was further assessed using the Heterotrait-Monotrait ratio (HTMT), in which all the values presented in Figure 03 are less than the 0.90 threshold, pointing to an acceptable level (Hair & Alamer, 2022). Additionally, the discriminant validity was also tested using the Fornell-Larcker criterion. All the items were more significant than the other correlation values among the latent constructs, as shown in Figure 04, indicating that discriminant validity has been achieved (Joe F. Hair, 2016).

These findings establish a solid basis for the following structural model analysis. The measurement model demonstrates strong internal consistency and convergent validity for the constructs of Type of Content, Global Identity, Average time, Power of the Algorithm, and Culture Identity. All these results set the way for an assessment of the relationships among the variables in the research. The model and their relationships between the constructs are represented in the Table 8.

Table 8. Discriminant validity - Heterotrait-Monotrait ratio (HTMT) - Matrix

	Culture Identity	Global Identity	Average time of use	Type of content the users engage with the most	Power of the algorithm
Type of content	0.177	0.107	0.209	0.122	0.114
Culture Identity		0.859	0.046	0.182	0.183
Global Identity			0.092	0.169	0.266
Average time of use				0.010	0.118
Type of content the users engage with the most					0.114

Table 9. Discriminant validity - Cross Loadings

	Type of Content	Cultural Identity	Global Identity	Average time of use	Type of content the users engaged with the most	Power of the Algorithm
Power of the Algorithm	0.164	0.174	0.206	0.118	0.114	1.000
Average time of use	0.209	-0.033	-0.039	1.000	-0.010	0.118
CI innovativeness	0.049	0.787	0.385	-0.053	0.176	0.141
CI security	0.198	0.664	0.391	0.010	0.030	0.031
CI self-direction	0.118	0.830	0.519	-0.016	0.167	0.281
CI universalism	0.092	0.709	0.480	-0.040	0.097	0.019
GI connected to the world	0.033	0.496	0.776	-0.067	0.111	0.161
GI global citizen	0.133	0.391	0.649	0.044	0.140	0.155
GI local events	0.056	0.325	0.636	-0.069	0.002	0.189
GI my own culture	-0.008	0.396	0.658	-0.018	0.111	0.067
Type of content	1.000	0.149	0.077	0.209	-0.122	0.114
Type of content the users engaged with the most	-0.122	0.162	0.142	-0.010	1.000	0.164

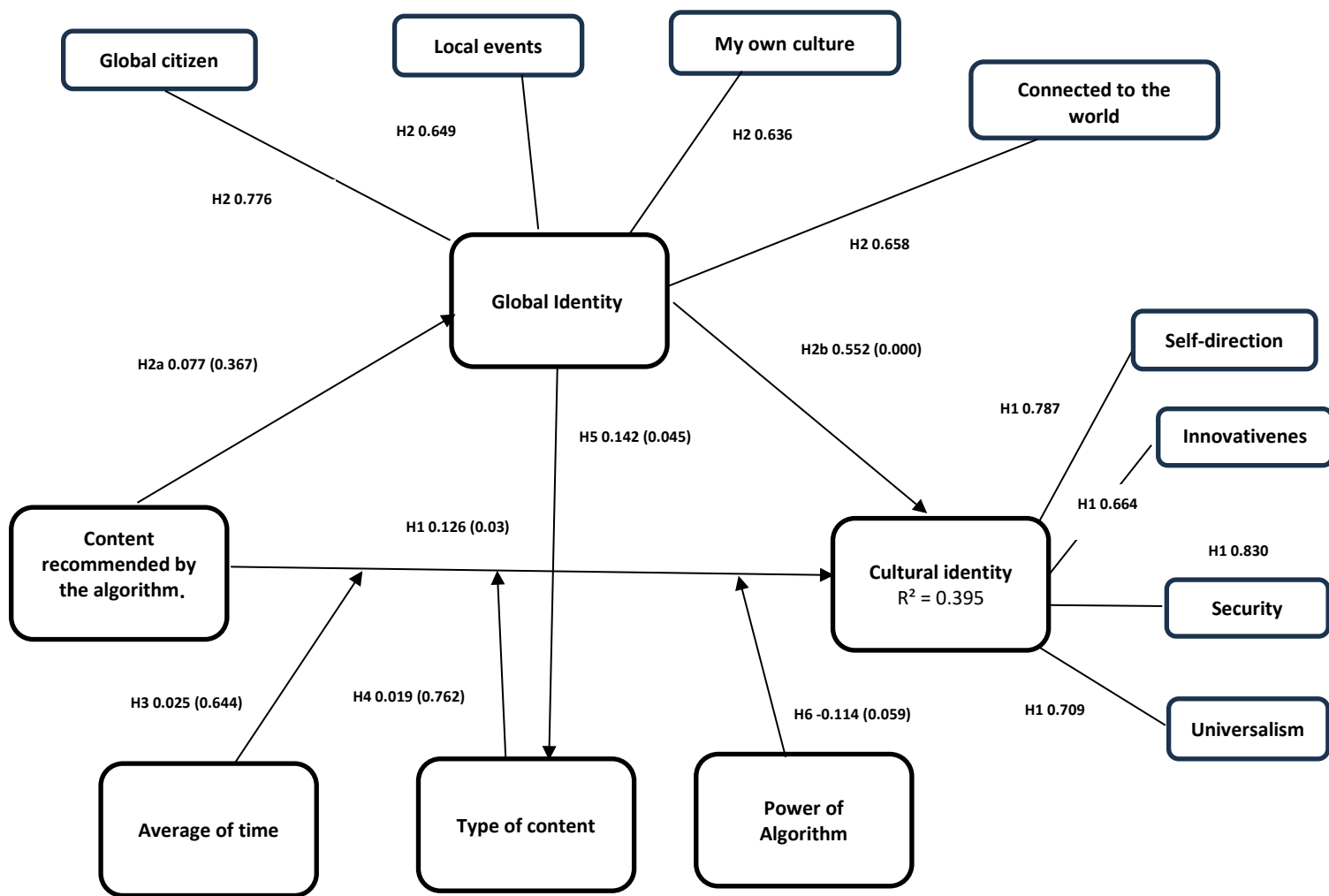


Figure 2. Measurement Model

The measurement model presents the different relationship between the constructs and their factor loadings.

4.3.2 STRUCTURAL MODEL

We evaluate the structural model to assess the path coefficients of the relationships between the constructs and their statistical significance (R-squares) with the purpose of testing the hypothesis. Path coefficients indicate the strength of the relationships between the constructs, showing the cause and effect between observed and latent variables. In addition, the R-square means the percentage of how much the independent variables can explain the dependent variable (users' cultural identity formation). The R-Square value of our dependent variable is 0.395, which implies a weak influence from the other independent variables in the model. However, cultural identity is a psychological construct that is constantly evolving in individuals (Chen & Lin, 2016), making it harder to predict the R-squared value than concrete constructs. Therefore, a low R-squared value is not perceived as harmful.

Furthermore, we examined the hypothesis using the bootstrapping method. This involved determining the significance of each path coefficient with 5000 subsamples, ensuring the reliability and validity of our findings.

4.3.2.1 TYPE OF CONTENT VS USERS' CULTURAL IDENTITY

We examined the impact of the type of content recommended by the Instagram algorithm as an independent variable on users' cultural identity formation as a dependent variable. The results revealed the recommended content's significant and positive impact on shaping users' culture identity formation, as evidenced by the statistical analysis (SM = 0.122; $t = 2.141$; $p=0.032$). Hence, hypothesis 1, which posits that the type of content recommended positively influences shaping users' culture identity, is supported by our findings.

Moreover, several studies have explored this phenomenon through various hypothesis and models, which supports our evidence showing that the content recommended by Instagram Algorithm and subsequent engagement help individuals reinforce or change their identities (Tin Chun Cheung, 2022). In addition, in quantitative research, we found significant relationships between digital media use and identity development (p -value less than 0,01) in adolescents (Davis, 2013).

4.3.2.1 Global Identity as a mediator

Next, we evaluated whether the type of content vs. culture identity can be explained by global identity. We conducted the type of content recommended as an independent variable, global identity as a mediator, and culture identity as the dependent variable. The results show that content type is not influenced significantly by global identity (SM = 0.075; $t = 0.902$; $p=0.367$). On the other hand, global identity has a strong and significant impact on cultural identity (SM = 0.012; $t = 10.167$; $p=0.00$), showing that the constructs are both towards the exact measurement, indicating that global identity is a fundamental driver of the formation on the shaping users' culture identity among the context in Instagram. In contrast, the indirect effect was insignificant (SM = 0.146; $t = 0.977$; $p=0.329$). This results in the relationship between the type of content and cultural identity not being mediated by global identity. Hence, our findings

do not accept H2, which posits users' global identity as a mediator.

However, prior studies indicate that involvement in a global network (social media) reshapes individuals' social identity by expanding their sense of belonging, with social identity being analyzed as a mediating effect and indicating a p-value of less than 0.01 (Gianluca Grimalda, 2018). In addition, previous findings suggested that social media plays a significant role in shaping individuals' global identities across different cultural contexts, with a significant positive relationship between social media use and global identity (Makri, Papados, & Schlegelmilch, 2021).

4.3.2.2 TIME OF USE AS MODERATOR

We drive that the relationship between the type of content recommended is strengthened by the time of use, which means that a high average time of use will result in greater significance of the impact of the formation on shaping users' culture identity. The results revealed that the relationship between type of content vs culture identity is not intensified by the average time of use (p-value = 0.644). Therefore, our data does not support hypothesis 3, which posits the average time of use as a moderator of the relationship between the content recommended and the shaping users' culture identity. In contrast, the findings from previous studies established that the frequency of Instagram use predicts the self-identity of the respondents (p-value = 0, 038) (Osude, 2021).

4.3.2.3 TYPE OF CONTENT THE USERS ENGAGED WITH THE MOST

Afterwards, we analyzed whether the type of content the users engaged with the most could moderate the relationship between the recommended content and cultural identity. The results show a non-significant p-value = 0.762. This demonstrates that the influence of the type of content as a moderator is not meaningful. Consequently, H4 is not validated, which implies that regardless of the type of content the users engage with the most, it doesn't significantly impact the relationship between the content recommended by the Instagram Algorithm and shaping users' culture identity.

4.3.2.4 IMPACT OF THE GLOBAL IDENTITY ON THE TYPE OF CONTENT THE USERS ENGAGE

The participants' global identity significantly and positively influenced the type of content the users engaged with a significant p-value = 0.032. This suggests that users' overall sense of identity is more discernible in shaping their content preferences and interactions on Instagram. Therefore, H5 is supported by our findings. The previous results confirmed our hypothesis showing that users expressed and constructed their identity through the content they interact in social media (Meehan, 2018).

4.3.2.5 POWER OF THE ALGORITHM AS MODERATOR

We examined if the belief in the power of algorithms could moderate the relationship between recommended content and cultural identity. The findings indicate a non-significant p-value = 0.059, which shows that these constructs do not impact positively on this

relationship. Although the value is close to below the benchmark of 0.05, it could help strengthen the relationship. By analyzing this assumption, the structural model without the construct of the power of the algorithm indicates that the p-value of the relationship between the type of content recommended and the shaping users' culture identity increases from 0.032 to 0.036, demonstrating that the power of the algorithm has a slightly positive impact on this relationship as a moderator. A previous study found that the trust in social media increases the positive impact of the social engagement on social relationships, with a significant p-value < 0.05 in the interaction effects (Islam Habis Mohammad Hatamleh, 2023).

4.4 GENERAL DISCUSSION

The findings about the impact of shaping users' culture identity evolution are positively influenced by the type of content recommended by the Instagram algorithm. The type of content is based on the four categories – food, clothing, entertainment, and lifestyle (Steenkamp & Jong, 2010; Holt, 1998) to which the users identify to a more international or rather national perspective within their cultural identity. This is aligned with the statement that the content recommended by Instagram and consequently the upcoming engagement indeed influenced and change the identities of the users (Tin Chun Cheung, 2022).

Another specific study showed that digital media use reinforces the identity development on adolescents (Davis, 2013). Additionally, there is evidence that the content recommendations even shape our political views (McKelvey, 2020), which reinforces that the algorithm employed within social media has the power to implement changes in our process of evolution of cultural identity, and so to shape the users' engagement.

Even though, the main premise (H1) is positively confirmed by our results, the mediators and moderators are not supported by our findings, except the users' global identity impacting positively on the type of content the users engaged with the most which is also confirmed by previous studies (Meehan, 2018), understanding the how the cultural changes and trends related to the global identity of the individuals can impact on the type of content the users interact with. Related to the global identity as a mediator, demonstrating that global identity and cultural identity are positively correlated, however, in our model, the type of content recommended by the Instagram Algorithm does not influence the global identity of the users. In contrast, the previous literature proof the opposite from our results showing that social media highly influenced (positively) global identity (Grimalda, Buchan, & Brewer, 2018). The same happens with the moderator of the average time of use (Meehan, 2018). In fact, each social media user spends on average 2h25min per day scrolling through their social (Aydin, Uray, & Silahtaroglu, 2021). Whereas, in our sample, the average time of use of the participants in Instagram was approximately 1h10min. Showing that since our average time of use was half of the time it can have less impact and strength to the relationship between the algorithm recommendations vs shaping users' culture identity. Analyzing the moderator effect of the type of content the users engaged with the most is not significant. In spite of, the previous studies show that the type of content the users engage in social media can impact their

identity or all the algorithm consumer culture (Aydin, Uray, & Silahdaroglu, 2021) which the content type is fundamental to the interactivity with media content (Georgiou, 2010) linking to online behaviors (Airoldi, 2021) or even reinforcing echo chambers and filter bubble (Terren & Borge-Brav, 2021; Pariser, 2011) that eventually leads with a new form/evolution of cultural identity since it is not something static and change through the time (Chen & Lin, 2016), which can explain the fact the moderator of type of content is not supported by our results in a way that the participants are not aware of the transcend process of change within their cultural identity (Green, 2020).

Last but not least, the moderator of the power of algorithm shows a high possibility ($p\text{-value} = 0,059$) to influence positively the relationship between the algorithm recommendations and the shaping users' culture identity, which the users tend to believe an algorithm filters and suppresses certain social identities (Karizat, Delmonaco, Eslami, & Andalibi, 2021). Additionally, the disenchantment of the capabilities of the algorithm leading to algorithm disillusionment (Graaf, Allouch, & Dijk, 2017) illustrates how our perception of the power of the algorithm can impact how we interact with social media.

Table 10. Hypothesis, P-Values, Decision

H	Relationship	Path Coefficient (β)	Sample Mean (M)	Standard Deviation (STDEV)	T-statistics	P-Value	Decision
H1	Type of content -> CI	0.126	0.122	0.059	2.141	0.032	Supported
H2	Type of content -> GI -> CI	-	0.042	0.048	0.894	0.371	Not Supported
H2.a	Type of content -> GI	0.077	0.075	0.086	0.902	0.367	Not Supported
H2.b	GI -> CI	0.552	0.558	0.054	10.167	0.000	Supported
H3	Type of content x Time of use -> CI	0.025	0.022	0.055	0.460	0.644	Not Supported
H4	Type of content x Type of content the users engage -> CI	0.019	0.021	0.063	0.303	0.762	Not Supported
H5	GI -> Type of content the users engage	0.142	0.146	0.070	2.020	0.043	Supported
H6	Type of content x Power of the Algorithm -> CI	-0.144	-0.106	0.060	1.886	0.059	Not Supported

CONCLUSION AND FUTURE RESEARCH

5.1. THEORETICAL IMPLICATIONS

From a theoretical perspective, this research provides several implications. First, we contribute to the algorithms and culture identity literature from the perspective of the users' reactions to the algorithm recommendations and their interactions within the scope of social media, most specifically on Instagram. The findings of this research are crucial to enhancing algorithmic culture theory (Airoldi & Rokka, 2022) in which the algorithm shapes and is shaped by the users and, in consequence, culture contexts. Thus, contributing to the extension of identity formed through the digital world.

This study enhances the findings' generalizations by examining participants' responses from all over Europe. Despite the extensive research on cultural identity or algorithms, our research extends the concepts of cultural and global identity to the field algorithm in social media, which, in this case, is Instagram. Thus, it provides insights into the consumer culture theory (Arnould & Thompson, 2005; Steenkamp, 2019) showing how social media (Instagram) interplay of both local and global perspectives.

Although our mediators and moderators fail to explain the relationship between the content recommendations by the algorithm and the impact on shaping users' cultural identity, it opens possibilities to explore significant variables to explain this causality.

Finally, this research opens up frameworks to explore further interactions and social dynamics between the users and the algorithm in social media such that it will urge. For instance, our thesis contributes to understanding how the content types can evolve in the dynamics of digital identity construction and the changes in the social-cultural paradigm.

5.2 PRACTICAL IMPLICATIONS

The study's findings have managerial implications for improving different spectrums, from analyzing the relationship between social media and the individual's identity to the regulation of algorithm recommendations.

Given that, it could be an opportunity to debate and investigate the social aspects arising from the relationship between social media and identity, such as the risks to the formation of a group's cultural identity, analyzing polarization about cultural opinions, and how is the influence of the social media regarding the cultural diversity and online inclusion.

Furthermore, this could be useful to comprehend and tackle social phenomena and their repercussions in terms of cultural identity and globalization since social media could be our new lives and could indicate how big the impact is. It also pays attention to the surface of the issues and dangers involved in excessive content controlled by algorithms, which could bring synergies to policymaking and regulation across governments and organizations.

5.3 CONTRIBUTIONS, LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

Our research answered the research question of how Instagram's algorithm recommendations impact users' cultural identity formation. Our findings indicate that Instagram's algorithm significantly impacts users' cultural identity formation. However, the mediator and the moderators failed to explain the positive influence of Instagram's algorithm recommendations on the changes in the shaping of users' cultural identity, which leaves space to explore the same constructs but in different relationships and data contexts. Another possibility would be to examine other constructs.

Moreover, the data sample has 181 valid answers collected in one answer by the participant through an online questionnaire. Since culture identity is a concept in individuals that evolves through time and space (Chen & Lin, 2016), for further research it would be intriguing to have long-term analysis. In addition, in this study 44% of the age are in the scope between 25 and 34 and 39% has a postgraduate/master thesis which it could leave some bias in our data sample. Leaving space of the function of factors as age, gender, and education levels and how it impacts the structural model.

Finally, the algorithm recommendations might change to one online platform to another (Garcia, 2023) (Narayanan, 2023), providing room to explore the impact of algorithm recommendations on the changes of the shaping users' cultural identity formation in other online platforms such as TikTok, Facebook, Spotify, Netflix, etc.

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ANNEXES

Online survey

- 1. Please rate your opinion about the type of content (food, clothing, entertainment, lifestyle) you consumed on Instagram.**

Entertainment movies, music

Lifestyle - i.e. vacations, sports, photography, video game, painting, festive days etc. From strongly disagree to strongly agree.

- 1.1 I enjoy food content that I think is popular in many countries around the world more than traditional food content that is popular in my own country.
- 1.2 I enjoy clothing content that I think is popular in many countries around the world more than traditional clothing content that is popular in my own country.
- 1.3 I enjoy entertainment content that I think is popular in many countries around the world more than traditional entertainment content that is popular in my own country.
- 1.4 I enjoy lifestyle content that I think is popular in many countries around the world more than traditional lifestyle content that is popular in my own country.

- 2. Which type of content do you engage/interact with the most on Instagram?**

Clothing

Entertainment

Lifestyle

Food

None of the above

- 3. Please rate your opinion about your Global identity and Local Identity by selecting on a scale from Strongly disagree to Strongly agree to each affirmation. From strongly disagree to strongly agree.**

- 3.1 I care about global events.
- 3.2 I feel I am a global citizen.
- 3.3 I believe people should be made more aware of how connected we are to the rest of the world.
- 3.4 I feel very proud to associate with my own culture.
- 3.5 I respect my local traditions and local events.
- 3.6 I am willing to engage with content made by international brands/influencers/celebrities.
- 3.7 I prefer engaging with content from international brands/influencers/celebrities rather than national brands/influencers/celebrities.
- 3.8 I would likely engage with national brands/influencers/celebrities' content.

4. Measure each value types that best define your personality and culture identity by selecting on the scale strongly agree to strongly disagree.

- 4.1 Power – Social status, control over people and resources. Social power, authority, wealth.
- 4.2 Achievement – Personal success through demonstrating competence according to social standards. Successful, capable, ambitious.
- 4.3 Hedonism – Pleasure and sensuous gratification for oneself. Pleasure, enjoying life.
- 4.4 Stimulation – Excitement and challenge in life. Daring, varied life, an exciting life.
- 4.5 Self-direction – Independent thought and creating, exploring. Creativity, curious, freedom.
- 4.6 Universalism – Understanding and protection for the welfare of all people and nature. Broadminded, social justice, equality, protecting the environment.
- 4.7 Benevolence – Preservation and enhancement of the welfare of people with whom one is in frequent personal contact. Helpful, honest, forgiving.
- 4.8 Tradition – Respect and acceptance of the customs and ideas that culture or religion provide. Humble, accepting my portion in life.
- 4.9 Conformity – Restraints of actions and impulses likely to upset or harm other and violate social expectations or norms. Politeness, obedience, honoring one's parents or elders.
- 4.10 Security – Safety and stability of society, of relationships, and self. Social order, clean.
- 4.11 Ethnocentrism – evaluating the other cultures according to preconceptions originating in the standards and customs of own's culture. Judge another cultures.
- 4.12 Nostalgia – sentimentality for the past. Belongingness, affiliation.
- 4.13 Innovativeness – the use of imagination or original ideas to create something. Quality, creativity.

5. What is your average time spent daily on Instagram?

30 minutes

1h

1h30

2h

2h30

2h30+

6. Please rate your opinion or perception about algorithm recommendations by selecting on the scale Strongly agree to Strongly disagree.

- 6.1 I follow algorithm recommendations.
- 6.2 I trust the content that appears on my feed.
- 6.3 I think the algorithm recommendations employed by Instagram are powerful.
- 6.4 I get addicted easily to the content it shows on my Instagram.

7. Describe in a few words how do you feel about the algorithm.

8. Gender

Male

Female

Non-binary/third gender Prefer
not to say

9. Age

18-24

25-34

35-44

45-54

55 above

10. Education

Some primary school

High school

Professional/technical diploma

Bachelor's degree

Postgraduate degree

