

ICT ADOPTION BY MOMPREENEURS DURING THE COVID-19 PANDEMIC: THE ROLE OF ENTREPRENEURIAL ORIENTATION

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Abstract: *Information and Communication Technologies (ICTs) can benefit mompreneurs, empowering them to start and expand their business. ICTs became even more important for mompreneurs during the COVID-19 pandemic when small business owners had to reinvent themselves and seek alternative ways of maintaining their sales and remaining in the market. In this context, this paper aims to investigate factors related to ICT adoption by Brazilian mompreneurs. The data were collected during the first months of COVID-19 pandemic and were analyzed through structural equation modelling. The descriptive analysis shows that mompreneurs are adopting innovative technologies such as electronic payments, cloud computing, social networks, video conferencing, and others to manage their business. Moreover, the results indicate that two dimensions of Entrepreneurial Orientation (proactiveness and risk-taking) have a significant effect on perceived ease-of-use and an indirect effect on ICT adoption.*

Keywords: *Mompreneurship, Entrepreneurial Orientation, ICT Adoption, COVID-19.*



INTRODUCTION

The increasing technological advances inherent to the digital age have revolutionized the ways of creating and doing business (Choudrie & Vyas, 2014; Wamuyu, 2015; Kraus et al., 2019). As indicated by Mathew (2010), Information and Communication Technologies (ICTs) tools help entrepreneurs in several areas such as product development, strategic planning, and marketing in addition to creating knowledge and expanding communication possibilities. Furthermore, cutting-edge technologies such as artificial intelligence, virtual reality, and big data analytics can provide significant benefits to business by improving the customers' experience and, consequently, increasing their satisfaction (Ameen, Hosany & Tarhini, 2021; Ameen, Tarhini, Reppel & Anand, 2021).

ICTs are especially relevant for mompreneurs that, aiming to balance the roles of mother and entrepreneur, usually operate their businesses from home, depending on ICTs to succeed and grow (Costin, 2011). ICTs facilitate the activity of mompreneurs during the last months of pregnancy and the first months after the baby is born, when women's physical movements are more restricted (Richomme-Huet & Vial, 2014). However, studies reveal that women often face barriers such as limited financial capital to invest in ICTs and lesser access to IT training opportunities (Orser et al., 2019), which may restrict their access to cutting-edge technologies. In this context, Internet-based technologies such as social media and e-commerce platforms can compensate for these limitations, by providing the conditions for mompreneurs to start a business and to establish a flexible schedule that fits their family responsibilities (Richomme-Huet & Vial, 2014; Orser et al., 2019).

During the COVID-19 pandemic, ICTs became even more important for the enterprises. Kim (2020) highlights the acceleration of digital transformation in the market during this period and Rapaccini et al. (2020) emphasize that in periods of calamity such as the COVID-19 pandemic, firms need to become more resilient and less dependent on human interactions by introducing new technologies and digital offerings. Brazil is one of the countries that was most affected by the COVID-19 pandemic (Farias & Araújo, 2021). The first case was registered in Brazil in February 2020 (Brazil, 2021) and since then, several restrictive measures have been taken by city mayors and state governors to contain the spread of the virus, such as social distancing, mandatory use of masks and closure of retail stores, malls, restaurants, hair salons etc.

In this scenario, this paper aims to investigate factors related to ICTs adoption by Brazilian mompreneurs through an extended Technology Acceptance Model (TAM) approach. According to Zaremohzzabieh et al. (2016), in order to understand ICTs adoption in small business, it is important to extend TAM with latent factors of entrepreneurship. A factor that is closely related to entrepreneur's activities and that differs among women and men (Adams et al., 2017; Zimmerman & Brouthers, 2012) is entrepreneurial orientation. Thus, in this paper we have extended TAM with the dimensions of Entrepreneurial Orientation (proactiveness, innovativeness, and risk-taking).

As pointed by Adams et al. (2017), focusing on women from developing countries is important due to the relevant role that entrepreneurship plays for the empowerment of women in these countries. Furthermore, women-owned businesses were the most affected by the COVID-19 pandemic (Manolova et al., 2020). Finally, the main results of this paper have the potential to extend TAM with the dimensions of Entrepreneurial Orientation (proactiveness,

innovativeness, and risk-taking). By incorporating individual Entrepreneurial Orientation to TAM, this study attempts to provide a broader representation of the factors affecting mompreneurs acceptance of information technologies.

LITERATURE REVIEW

Recognized as a key factor for socioeconomic development of growing economies, female entrepreneurship helps women to expand their participation in the labor market, contributing to reduce inequalities and poverty (Mathew, 2010; Sarfaraz, Faghieh & Majd, 2014). Considered a little studied phenomenon in the literature, mompreneurship can be viewed as a dimension of female entrepreneurship, given the particularity of being driven by the desire to balance the roles of mother and entrepreneur (Richomme-Huet and Vial, 2014). Richomme-Huet and Vial (2014) point out that motherhood encourages self-employment due to the family responsibilities imposed to mothers. According to the authors, it is common for mothers to leave the formal labor market and start a business activity as an alternative source to supplement the family income.

The study of Ajefu (2019) identified that having children increases women's probability of being entrepreneur. As pointed by Ajefu (2019), childcare requires intensive efforts of women, affecting their performance in the formal labor market and leading them to seek for a self-employment that provides them with flexible working hours and the possibility of balancing the relationship between work and childcare. Flexible work is also pointed out by Genç and Oksuz (2015) as an emerging feature in the business environment that provides women with greater participation in the labor market, despite their family responsibilities. The concerns with the household and well-being of children were pointed by Janssens et al, (2019) as women's motivation for the implementation of their own business.

Regarding ICTs adoption, previous studies show that women entrepreneurs have been using technological innovations as an instrument of business development (Mathew, 2010; Beninger et al., 2016; Gichuki & Mulu-Mutuku, 2018; Crittenden et al., 2019). These studies highlight the role of technology as an effective tool for women entrepreneurs, since ICTs contribute to: empower women; expand their business; build reputation and social capital; increase marketing reach; create competitive advantage; and explore opportunities in the global market (Mathew, 2010; Costin, 2011; Beninger et al., 2016; Gichuki & Mulu-Mutuku, 2018; Crittenden et al., 2019).

With regard to mompreneurship, Costin, (2011) points that ICTs enable mompreneurs to develop their business activities at home. However, considering the lack of empirical research related to technology adoption by mompreneurs, Costin (2011) points out the need of empirical studies to investigate mompreneurs that have adopted ICTs and that have succeeded in their business. According to the author, the results of these studies can be used to build a database containing the main practices that resulted in positive outcomes (Costin, 2011). Thus, this study aims to fill this gap in the literature.

RESEARCH MODEL AND HYPOTHESES

Technology Acceptance Model

Among the theories to investigate user acceptance of technologies, the Technology Acceptance Model (TAM) proposed by Davis (1989) has been the most employed in the Information Systems literature (Ayeh, 2015; Zaremohzzabieh et al., 2016). It postulates that the acceptance of a new information system is predicted by two variables: the perceived usefulness and the perceived ease of use (Davis, 1989). According to Davis (1989), ease of use means that the system is free from difficulty to be used. A useful system is the one that enhances user-performance (Davis, 1989).

The TAM also posits that perceived ease of use impacts perceived usefulness. This means that if a system is perceived as useful and relevant to the performance of the user's activities, but it is perceived as difficult to use, it may not be adopted (Davis, 1989). The TAM has been used to investigate user acceptance of different Information and Communication Technologies (ICTs) such as Near Field Communication (NFC) (e.g. Dutot, 2015), Mobile Banking (e.g. Malaquias & Silva, 2020), automated vehicles (e.g. Zhang et al., 2020), and social media (e.g. Gavino et al., 2019). In the context of female entrepreneurship, Crittenden et al. (2019) have used TAM to examine the impacts of ICTs adoption on social capital, self-efficacy, and empowerment.

Prior studies have confirmed empirically that new technologies tend to be adopted when individuals perceive them as easy to use and useful, and that perceived ease of use have a positive effect on perceived usefulness (Crittenden et al., 2019; Malaquias & Silva, 2020; Zhang et al., 2020). Based on these previous studies we hypothesized that:

- H1a: Perceived usefulness has a positive effect on ICTs adoption by mompreneurs
- H1b: Perceived ease of use has a positive effect on ICT adoption by mompreneurs.
- H1c: Perceived ease of use has a positive effect on perceived usefulness.

Although Davis (1989) have identified that perceived ease of use and perceived usefulness are key determinants of technology acceptance, he emphasized the need of future research to examine how other variables impact usefulness, ease of use, and technology acceptance. Therefore, several studies have proposed the extension of TAM, by incorporating other variables (Dutot, 2015; Malaquias & Silva, 2020; Zhang et al., 2020; Gavino et al., 2019; Crittenden et al., 2019). In order to apply the TAM in the context of mompreneurship we have extended TAM with the dimensions of Entrepreneurial Orientation: innovativeness, proactiveness, and risk-taking propensity.

Entrepreneurial Orientation

Entrepreneurial orientation (EO) is related to the behavior of managers, involving aspects such as their practices and decision-making process (Tajudeen, Jaafar, & Ainin, 2018). Previous studies have indicated that EO is one of the factors driving the diffusion and adoption of innovations by entrepreneurs (Peltier et al., 2009; Gupta et al., 2016; Eggers et al., 2017; Dubey et al., 2020).

Gupta et al. (2016) argue that EO is a psychological construct that may impact new technologies adoption and point that EO may increase the probability that an individual will adopt and have a sustained engagement with new technologies. According to Eggers et al. (2017), EO is a factor that influences social media use and Dubey et al. (2020) pointed that EO is closely related to the adoption of big data analytics.

EO consists of three major dimensions: innovativeness, proactiveness, and risk-taking (Abebe, 2014; Rigtering et al., 2014; Tajudeen, Jaafar & Ainin, 2018). Unlike previous studies that analyzed the impact of EO on technology adoption considering it as a single construct, in the present study we considered and tested each dimension of EO as an independent variable in the same way as Hammerschmidt et al. (2020).

Innovativeness can be viewed as a propensity to engage in new ideas, creative process, experimentation, and technological leadership (Abebe, 2014; Rigtering et al., 2014). The study of Thong and Yap (1995) showed that there is a positive relation between CEOs innovativeness and IT adoption in small business. Magotra et al. (2016) also found that innovativeness is a key factor affecting technology adoption.

Proactiveness involves the behaviors of taking the initiative and acting in anticipation of future problems, trends and demands (Abebe, 2014; Rigtering et al., 2014). According to Abebe (2014), a high level of proactiveness among small business owners/managers can lead to e-commerce adoption. The study of Dubey et al. (2020) revealed that proactiveness is one of the desirable entrepreneurial traits when making decisions related to new technologies adoption.

Risk-taking reflects the disposition of entrepreneurs to engage in projects that have uncertain results or high probability of failure (Rigtering et al., 2014; Tajudeen, Jaafar & Ainin, 2018). Peltier et al. (2009) identified a positive relationship between risk orientation and adoption of CRM and the study of Quinton et al. (2018) indicates that risk taking propensity is a determinant of a Digital Orientation. Magotra et al., (2016) found that risk-taking propensity have positive impact on disposition of individuals towards technologies adoption. Abebe (2014) argues that entrepreneurially oriented firms are more likely to take risks in adopting new technologies, such as e-commerce, aiming to improve their business performance and competitiveness in the market.

As pointed by Pipitwanichakarn and Wongtada (2019), although innovativeness, risk-taking and proactiveness behaviors entail a sense of technology readiness, EO may not have a direct impact on technology adoption, since factors such as trust, ease of use, and perceived usefulness mediate this relationship. Furthermore, Venkatesh and Davis (2000) point that that effect of external factors on usage behavior is mediated by perceived ease of use and perceived usefulness. Based on the study of on Venkatesh and Davis (2000) and on Pipitwanichakarn and Wongtada (2019), we argue that the linkage between the dimensions of EO and ICT adoption is indirect with ease of use and perceived usefulness mediating this relationship. Therefore, we proposed the following hypotheses:

H2a: Innovativeness has a positive effect on perceived ease of use.

H2b: Proactiveness has a positive effect on perceived ease of use.

H2c: Risk-taking propensity has a positive effect on perceived ease of use.

Figure 1 presents the research model and the hypotheses of the study.

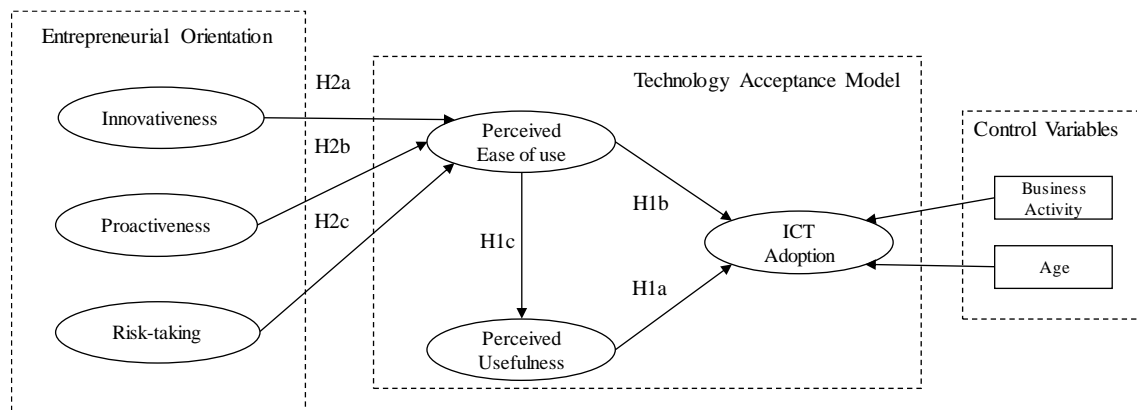


Figure 1. Research Model.

METHODS

In order to achieve the purpose of this research, we collected data through an online survey. The questionnaire, which was answered in a voluntary and anonymous way by the participants, was developed based on a literature review and contains questions pertinent to the research's objective, such as demographic characteristics, respondents' perception about ICTs adoption, and entrepreneurial orientation. The Appendix shows the items and references that we used for the constructs Ease of Use, Perceived Usefulness, Innovativeness, Proactiveness, and Risk-taking. For these items, we used a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5).

Initially, we invited mompreneurs from our contact lists at social networks to participate in the research. Then, we used a snowball sampling technique to identify mompreneurs outside of those lists, asking the initial participants to indicate other mompreneurs who could participate in the research. The data collection occurred from April 2020 to June 2020, which correspond to the first months of COVID-19 pandemic.

After obtaining the responses, we examined the data and excluded questionnaires with missing values, straight lining responses and questionnaires that did not meet the inclusion criteria of the research. Some respondents, for example, indicated that they didn't have any children.

Overall, there were 176 complete and valid questionnaires available for data analysis. As recommended by Hair et al. (2019), the minimum sample size for models with less than seven constructs, at least modest communalities (.5), and no underidentified constructs is 150. Hair et al. (2019, p. 632) also points that the Maximum Likelihood Estimation (MLE) used in this paper, "provides valid and stable results for simple models with sample sizes as small as 50". Furthermore, for the factor analysis, it is recommended a ratio of at least 5 participants per item (Tinsley & Tinsley, 1987; Hair et al., 2019). Since the questionnaire has 19 items, 95 participants would suffice.

We analyzed the data through descriptive statistics and, then, we conducted the evaluation of the research model in two stages (Anderson & Gerbing, 1988). First, the indicators of the Confirmatory Factor Analysis - CFA (convergent and discriminant validity) were accessed. After the CFA, we used Structural Equation Modeling (SEM) for hypothesis testing. For the CFA, as well as for the SEM, we observed the guidelines available in the literature (Hair et al., 2005). In order to analyze a potential indirect effect of Entrepreneurial Orientation Dimensions on ICT

Adoption, we also observed the bootstrap confidence intervals (in this case, we considered 2,000 bootstrap subsamples). To include Age as a control variable, we have converted it in a categorical variable (1 = 20 - 29 years old; 2 = 30 - 39 years old; 3 = 40 - 49 years old; 4 = 50+ years old). The control variable Business Activities is a dummy variable with 1 representing “products selling” and 0 representing “service firms”.

RESULTS

Table 1 presents the demographic data of the mompreneurs that participated in the survey. The results in Table 1 indicate that the sample was comprised of mompreneurs of different ages, level of education, and marital status. It is important to note that most of the respondents have completed at least the undergraduate level.

A descriptive analysis of the dataset also reveals that in addition to running their own business, approximately 25% of the respondents have another job and that 40% of the respondents are the main responsible for the household income. Moreover, almost 50% of the mompreneurs have formal business activities, but less than 25% of them have employees. About 60% of them sell products (food, cosmetic products, clothes and accessories, for example) and 40% operate in the service sector (insurance, health, education, architecture, beauty services etc.). The sample profile is similar to the sample profile of the research of Crittenden et al., (2019) carried out with women entrepreneurs in South Africa.

Table 1. Demographic characteristics of the respondents

Age	n	%	Number of children	n	%
20-29	11	6.25	1	71	40.34
30-39	63	35.80	2	81	46.02
40-49	63	35.80	3+	24	13.64
50+	39	22.16			
Marital Status	n	%	Level of Education	n	%
Single	21	11.93	Some primary school	3	1.70
Married or living together	130	73.86	Some high school	2	1.14
Divorced or Separated	16	9.09	High school	24	13.64
Widowed	7	3.98	Some university work completed	17	9.66
Missing	1	0.57	Undergraduate degree completed	48	27.27
			Graduate degree completed	79	44.89

Source: own elaboration.

Table 2 shows an overview of the ICTs adopted by the mompreneurs. In line with the research of Crittenden et al., (2019), almost all of the mompreneurs that participated in the research (97.73%) use WhatsApp to support their business activities. Facebook and Instagram are also used by most of them. These data are also similar to those of previous studies carried out with women entrepreneurs, such as the study of Jose (2018), which showed that Facebook and WhatsApp were the most popular platforms for women entrepreneurs in the United Arab

Emirates, and the study of Choudhury (2021), that found that Instagram and Facebook are the main social media adopted by Bangladeshi women.

As reported in Table 2, more than 97% of the respondents use smartphones to support their business, while notebooks are used by close to 70% of them. These results are also similar to those of Crittenden et al. (2019) and reflect the popularity of smartphones in developing countries such as Brazil, showing that, in addition to personal use, smartphones are broadly used for business administration.

About 25% of the respondents indicated that they use other types of ICTs such as e-commerce platforms, cloud computing, video conferencing, financial management systems, CRM systems and image editing software.

Table 2. Social media and devices used by the respondents.

Social Media	n	%	Device	n	%
WhatsApp	172	97.73	Smartphone	171	97.16
Instagram	143	81.25	Notebook	122	69.32
Facebook	138	78.41	Desktop Computer	54	30.68
Youtube	39	22.16	Tablet	28	15.91
LinkedIn	23	13.07			
Twitter	10	5.68			
Other	19	10.80			

Note: More than one Social Media and Device could be selected by the respondent.

Source: own elaboration.

In order to evaluate the internal consistency and convergent validity of the constructs, we used the following indicators: Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's Alpha (CA). According to the literature, these indicators must be higher than 0.5, 0.7, and 0.7, respectively (Hair et al., 2005). The results in Table 3, show that all indicators meet these criteria, indicating that the constructs present good reliability and convergent validity.

Table 3. Constructs reliability and internal consistency.

Construct	AVE	CR	CA
PU	0.858	0.947	0.944
PEOU	0.717	0.883	0.878
Innovativeness	0.652	0.847	0.834
Proactiveness	0.528	0.769	0.754
Risk-taking	0.636	0.839	0.834
ICT Adoption	0.755	0.924	0.921

Source: own elaboration.

Regarding to discriminant validity, the root square of the AVE for each construct must be higher than the correlations of the construct with other constructs. Table 4 presents these statistics and shows that, for all constructs, the observed values satisfy this specification.

In summary, the results indicate that the constructs have good internal consistency (Table 3) and represent individual measures (Table 4).

Table 4. Discriminant Validity

Construct	PU	PEOU	Innovat.	Proact.	Risk-tak.	ICT Adop.
PU	0.926					
PEOU	0.491	0.847				
Innovat.	0.129	0.275	0.808			
Proact.	0.502	0.393	0.573	0.726		
Risk-tak.	0.229	0.400	0.335	0.522	0.797	
ICT Adop.	0.661	0.528	0.096	0.386	0.205	0.869

Note. Diagonal values represent the square roots of AVE; off-diagonal values represent the correlation between the constructs.

Source: own elaboration.

In the CFA stage we also analyzed the indexes for goodness of fit. Table 5 displays the observed statistics for our measurement model. This table also contains the indexes related to the structural model that was used for hypotheses testing with SEM. Both CFA and SEM analysis presented measures for goodness of fit higher or close to the values suggested by the literature.

Table 5. Goodness of fit of the models.

Items	CFA	SEM
RMSEA	0.069	0.085
RMSEA (LO 90)	0.055	0.074
RMSEA (HI 90)	0.082	0.096
Chi-square	250.673	410.869
d.f.	137	183
Chi-square/d.f.	1.830	2.245
GFI	0.873	0.816
IFI	0.953	0.904
CFI	0.953	0.903

Notes. d.f.: degrees of freedom; RMSEA: Root Mean Square Error of Approximation; GFI: Goodness of Fit Index; IFI: Incremental Fit Index; CFI: comparative fit index.

Source: own elaboration.

After the CFA, we started the hypotheses testing. Table 6 shows the expected signs for the hypotheses and the path coefficients. The r-squared for the main dependent variable (ICT Adoption) was 0.524, which means that the variables can explain about fifty-two percent of the variance of ICT adoption.

Table 6. Results of the hypotheses testing.

Hyp.	Relationship	Expected sign	Path Coefficients	Result
H1a	PU → ICT Adoption	+	0.612 ***	Supported
H1b	PEOU → ICT Adoption	+	0.282 ***	Supported
H1c	PEOU → PU	+	0.457 ***	Supported
H2a	Innovativeness → PEOU	+	0.082	Not Supported
H2b	Proactiveness → PEOU	+	0.234 ***	Supported
H2c	Risk-Taking → PEOU	+	0.238 ***	Supported

Note: ***, $p < 0.01$.

Source: own elaboration.

The effect of the control variables Business Activity and Age on ICTs adoption was not significant. This means that the adoption of technologies occurs regardless of the sector in which the mompreneur operates and that age does not represent a barrier to technology adoption by mompreneurs.

The findings also show that PEOU was strongly predicted by the dimensions of proactiveness and risk-taking, but was not necessarily predicted by innovativeness (see Table 6). The variables Proactiveness and Risk-Taking presented a positive and significant indirect effect on ICTs adoption through Ease of Use and through Perceived Usefulness ($p < 0.01$ for Proactiveness and $p < 0.05$ for Risk-Taking). Moreover, these two variables (Proactiveness and Risk-Taking) also presented a significant positive indirect effect on Perceived Usefulness through the construct Ease of Use ($p < 0.01$ and $p < 0.05$, respectively). The results are consistent with the TAM theory that posits that the effect of external factors on usage behavior is mediated by perceived ease of use and perceived usefulness (Venkatesh & Davis, 2000). The findings are also in line with the findings of Pipitwanichakarn and Wongtada (2019), that found that the effect of EO on ICT adoption is indirect.

The results indicate that behavioral characteristics of mompreneurs (proactiveness and risk-taking) have a positive effect on technology adoption. Considering that the data were collected during the first months of the COVID-19 pandemic, the findings suggest that these behaviors are important for mompreneurs to keep up with the acceleration of digital transformation in the market during this period. Although mompreneurs who are less inclined to take risks and that are less proactive have chosen to develop entrepreneurial activities, they may be benefiting less from ICTs resources due to behavioral barriers.

Considering the relevance of the mompreneurship to the socioeconomic development, the main results of this study reinforce the need of public policies and initiatives aimed at enhancing mompreneurs self-efficacy to use ICTs. As perceived ease of use proved to be a determining factor in the adoption of ICTs by mompreneurs, policymakers can, for example, offer specialized training programs to mompreneurs. As pointed by previous studies, ICTs adoption can lead to greater marketing reach, empowerment and better business performance (Mathew, 2010; Costin, 2011; Beninger et al., 2016; Gichuki & Mulu-Mutuku, 2018; Crittenden et al., 2019). By knowing the potential of ICTs and by understanding how to use them, these women can expand their perception on the usefulness of ICTs and feel more prepared to use them. Thus, this study has practical implications because it offers insights that can help mompreneurs to understand the application of information technologies and their

importance to business. This is especially significant for developing countries like Brazil, which has a large number of women entrepreneurs who can benefit from low-cost technological resources such as social media.

CONCLUSIONS

Considering the relevant role that Information and Communication Technologies (ICTs) play in the context of mompreneurship, this study investigated factors related to ICTs adoption by mompreneurs during the COVID-19 pandemic, by extending TAM with the dimensions of entrepreneurial orientation.

The results show that perceived usefulness and perceived ease of use are positively related to ICTs adoption. Furthermore, we identified that two entrepreneurial orientation dimensions (risk-taking and proactiveness) have positive and significant effect on perceived ease of use and an indirect effect on ICTs adoption. Mompreneurs who present behavioral characteristics related to proactiveness and risk-taking are more likely to adopt technological tools that may contribute to their business development. These findings indicate that behavioral factors can influence technology adoption by entrepreneurs even during periods of crisis when digital acceleration is of fundamental importance.

We also found that smartphones and WhatsApp are used by almost all respondents to support their business activities. Facebook and Instagram are also used by most of them. The usefulness and ease of use of these technologies for business administration purposes and the fact that they are free tools may be related to their diffusion and acceptance among the mompreneurs. It is important to highlight the role that these technologies play in empowering these women by allowing them to work from home, balancing the family responsibilities with their entrepreneurial activities. Through social network marketing, it is possible for mompreneurs to follow market trends to offer to customers exactly what they want. Anticipating customer aspirations can become an interesting technique to increase the sales. It is also important to emphasize the resources provided by social media such as Instagram that allow mompreneurs to implement digital offerings in an innovative way.

Electronic payment, that can help these women to expand their market, is an innovative technology that is being adopted by most of the respondents. The study also reveals that most mompreneurs use ICTs to learn how to increase their sales and to present products and services to the customers. Finally, we identified that, in addition to social networks, 25% of the respondents use other types of ICTs to manage their business, which includes cloud computing, e-commerce platforms, video conferencing, financial management systems, CRM tools and image editing software.

We emphasize the necessary adaptation experienced by these women during the COVID-19 pandemic, a scenario that have accelerated the digital transformation and required the development of new business strategies. Thus, the mompreneurs that participated in the research may have found in ICTs an alternative to manage and maintain their business.

This research has practical and theoretical contributions. From the theoretical point of view, this study contributes to the literature by extending the TAM with the dimensions of entrepreneurial orientation and by demonstrating that the propensity to behave entrepreneurially is an important factor to understand business owners' reactions to ICTs. The

findings of the study reinforce the relevance of considering behavioral factors in addition to technological constructs to achieve a more comprehensive understanding of technology adoption. Moreover, this research contributes to fill the gap related to the lack of studies on ICTs adoption in the context of mompreneurship.

Regarding the practical contributions, this study reflects the perception of mompreneurs from a developing country regarding ICTs adoption; entrepreneurship is of especial relevance in these countries and the main findings of this research can contribute to the development of public policies and initiatives aimed at these businesswomen. These policies and initiatives would be especially relevant for mompreneurs that are less inclined to take risks and may empower them to face competitive challenges.

This study is pioneering in investigating ICTs adoption by mompreneurs. Future studies can test the proposed model with mompreneurs from other developed and developing countries to make cross-country comparisons, since the national level of income may be one of the factors that influence the adoption of ICTs by mompreneurs. Future research can also investigate how cultural factors affect ICTs adoption by mompreneurs in developing and developed countries. Finally, further studies could investigate the impacts of ICTs adoption in the context of mompreneurship.

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Appendix

Perceived Ease of Use (Davis, 1989; Crittenden et al., 2019)

EU1 - Overall, I find ICTs easy to use to support my business

EU2 - Learning to use ICTs would be easy for me

EU3 - I feel comfortable using ICTs to support my business

Perceived Usefulness (Davis, 1989; Crittenden et al., 2019)

PU1 - I find ICTs useful in supporting my business

PU2 - Using ICTs enhances my business effectiveness

PU3 - Using ICTs improves my job performance

Risk-taking (Rigtering et al., 2014)

RT1 - I value new strategies/plans even if I am not certain that they will always work

RT2 - To make effective changes to my offering, I am willing to accept at least a moderate level of risk of significant losses

RT3 - I like to take risks with new ideas

Proactiveness (Rigtering et al., 2014)

PA1 - I am constantly looking for new business opportunities

PA2 - My marketing efforts try to lead customers, rather than respond to them

PA3 - I work to find new business or markets to target

Innovativeness (Rigtering et al., 2014)

IN1 - I consider my business to be innovative

IN2 - My business is often the first on the market with new products and services

IN3 - Competitors in this market recognize me as a leader in innovation

ICTs Adoption (Beninger et al., 2016; Crittenden et al., 2019; Gichuki et al., 2018)

US1 - I use ICTs to present my products

US2 - I use ICTs to provide information to my current and potential customers about my products

US3 - I use ICTs to learn about ways to improve my sales

US4 - I use ICTs to make electronic payments related to my business
