

## **Using New Forms of Information and Communication Technologies to Empower SMEs**

### **Abstract:**

Given the growing importance and demand for online food purchases, this study explores the new advancements in Information and Communication Technologies (ICTs) by examining the key features of social commerce, trust, and product's attributes in the e-commerce environment. Although recent theoretical developments and empirical studies indicate the critical role of ICTs to advance online retailers' management and innovation, limited research focus on the impact of ICTs in the Food & Beverage (F&B) industry under the e-commerce context. Furthermore, while much of knowledge of the effect of ICTs in the developed countries or regions, there is a need for gaining more insights from developing countries. The aim is to investigate possible ICTs-related entrepreneurial opportunities in the F&B industry. We use an online survey to collect data from Malaysia and test our model. The structural equation modelling results illustrated that Social Commerce constructs significantly impact trust, leading to customer's Purchase Intention. Additionally, Product's Attributes was found to have a significant relationship with customer's Purchase Intention with Trust being the most pertinent driver. This study also contributes to the F&B literature by highlighting the role of new forms of technologies in entrepreneurship activities, especially for small and medium-sized enterprises (SMEs).

**Keywords: ICT; Entrepreneurs; E-commerce Technologies; Trust; purchase intention**

## **1.0 Introduction**

With the new advancements in ICTs, e-commerce has gained more and more attention both in practice and research. For example, according to Oberlo's projection, E-commerce sales will increase from \$1.3 trillion in 2014 to \$4.5 trillion in 2021 (Mohsin 2020). Especially in the period of COVID-19, the trend of online shopping is unstoppable and is increasing hugely. Since the Food and Beverage (F&B) industry needs to deal with perishable goods, which should be sold quickly and preserve the high quality, e-commerce can become an excellent help for the F&B industry. eMarketer estimated that online food and beverage sales in the US grew 18.2% in 2019. The total sales number will surge to \$19.89 billion (Lipsman 2019). E-commerce provides a better way to help the F&B industry to deal with information management and product processing. Some big F&B companies are paying strong interest in developing e-commerce. Nestle's e-commerce sales grew by 18.5%, reaching 8.5% of its total retail sales (Mohsin 2020). Except for traditional F&B firms, some tech firms focus on developing an e-commerce strategy for the F&B industry. For instance, Amazon bought Whole Foods back in 2017 for \$13.4 billion and tried to understand the grocery business and convert it to a whole e-commerce environment (Berthene 2019).

E-commerce helps firms and provides a convenient and safe environment for customers to purchase high-quality products. In an e-commerce environment, customers can also choose from a wide range of products and be well-informed before purchasing (Hajli and Featherman 2017a). Though e-commerce promotes several opportunities and benefits for both firms and customers, both parties still have some challenges (Bazi et al. 2019; Hajli 2018; Hajli 2019b). For example, in the period of COVID-19, there are some changes in the consumption level. The overall demand for food and beverage products increased during the pandemic, but many firms did not fully adjust to these changes. Due to a lack of effective supply chain management, US farmers are estimated to have to dump 3.7 million gallons per day (BBCNews 2020).

New technological advancements developed e-commerce to social commerce (Hajli 2020; Hajli and Featherman 2017b). Social commerce is a new form of e-commerce that enables customers to have some interaction (Hajli and Sims 2015; Hajli et al. 2017b). In this study, we argue that with the help of social commerce and new forms of information technologies (e.g., information and communication technologies), companies can improve their entrepreneurship activities and stimulate customers to purchase more of their products. Existed social commerce research mostly investigated the tool of social media (e.g., Hajli 2014a; Hajli 2014b; Hajli 2015). For example, Hajli (2015) highlighted the role of social communication in the social commerce transaction process. The author found that trust can influence social media communication when customers interact with social media and leads to purchase intention. Besides, Lin et al. (2019) proposed that there are another type of social commerce style is that firms apply social media into traditional e-commerce environment. They provided one example of Amazon. Amazon integrates several social media (e.g., Facebook, Twitter) sharing features to help customers share and recommend what products they purchase.

As the technological environment continues to change, businesses' tools, and procedures to promote entrepreneurship activities are changing. For example, information and communication technologies (ICTs) can be effective tools to help farmers and firms to protect and main food security and quality (TechnologyWatch 2020). The usage of ICTs in the Food and Beverage (F&B) industry can support and promote the information change in different industry actors. For example, Akintelu et al. (2016) investigated factors that can contribute to adopting ICTs in the Nigerian F&B industry. These adoption factors are human resource capability, level of ICTs investment, and ICTs competency.

Although some researchers have spent many efforts investigating the topic of social commerce and ICTs, the current literature still has limitations in certain areas. As noted before, previous social commerce research mainly focused on investigating social commerce on social

media. To our best knowledge, few studies attempt to investigate the role of new forms of innovative technologies other than social media in social commerce. The second gap this study addresses is the lack of focus on entrepreneurship need for Small and Medium Enterprises (SME) as most existing researches mainly discuss entrepreneurship for mega F&B companies. Questions like how entrepreneurs and SME owners/managers apply new forms of innovative technologies for their business need to be answered. Furthermore, few studies have been examined the role of social commerce in the developing countries. As developing countries have less resources when compared with developed countries, it is essential to have a comprehensive understanding of social commerce in both developed and developing countries.

To address these research gaps, this study proposes a new empirical model that captures key features of social commerce and also investigates some other key factors (trust, product's attributes) in the e-commerce environment, to investigate possible ICTs-related entrepreneurial opportunities in the F&B industry. In the context of specific social commerce, this work incorporates social commerce functions with ICTs. Thus, our work contributes to the F&B literature by highlighting the role of new forms of technologies in entrepreneurship activities, especially for SMEs, thus providing a deeper understanding of innovative technologies adoption and application in the F&B industry. Besides, it highlights social commerce's role, particularly the role of introducing new technologies to drive consumer buying behaviours. From a practical point of view, this research provides significant help on how entrepreneurs and SME owners/managers apply new forms of innovative technologies for their business through the application of social commerce.

The study organizes as follows: In section 2 (Literature Review), this study's theoretical foundation and hypotheses development will be discussed. In section 3 (Methodology), our empirical research methodological design will be discovered. In section 4 (Data Analyses and Results), results and findings will be provided based on our empirical data analysis. Lastly, in

section 5 (Discussion), the study results, theoretical contributions, managerial implications, and future directions are discussed.

## **2.0 Literature review**

### **2.1 Theoretical Background**

#### *2.1.1 ICTs and the opportunities for entrepreneurship*

To develop and maintain competitive advantages in entrepreneurship, enhance organizational performance, and economic growth, more and more organizations, applied ICTs massively (Barba-Sánchez and Jiménez-Zarco 2007). ICTs many different kinds of features and functions not only provide considerable flexibility in the entrepreneurship context but also increase the efficiency of entrepreneurship development and employment opportunities (Haghighi et al. 2018). Hafkin and Taggart (2001) argued that ICTs are the most powerful technological tools for business development and boost entrepreneurship activities. Brynjolfsson and Saunders (2009) empirically testified that ICTs could improve organizational performance and entrepreneurship at firm levels. Besides, Brady et al. (2002) suggested that there are several aspects that ICTs can play a vital role: information providers, technology infrastructure, social construction, and business process and systems. ICTs contribute to the generation, integration, information transfer, cost reduction, cross country and cultural development, and long-term enhancement of entrepreneurship development (Soriano et al. 2015). Various types of ICTs have been widely applied in e-commerce, new production methods, new services, customer relationship management, and decision support (Yunis et al. 2018). Existed research has paid much attention to the critical role of ICTs in entrepreneurship development. For example, several researchers have investigated the benefits of adopting ICTs in developing countries. ICTs adoption helps fight for poverty and stimulates entrepreneurship activities (e.g., Haghighi et al. 2018; Suraajudeen 2017). Besides, based on China's evidence, Zhang and Li (2018) generalized that ICTs can help entrepreneurship in cultivating business

ideas, enhancing abilities of the information process, and improving social influence. In general, ICTs allow entrepreneurs to obtain instant market information and improve marketing capabilities (e.g., Chen et al. 2015; Nazir and Pinsonneault 2012), help entrepreneurs to access new business opportunities and decrease cost (Pan et al. 2015), and promote effective communication with customers (Agarwal et al. 2009).

### *2.1.2 E-commerce in the food and beverage industry*

Turban et al. (2002) defined e-commerce as "the process of buying, selling, transferring, or exchanging products, services, and/or information via computer networks, mostly Internet and intranets." Businesses are now using different kinds of innovative technologies (e.g., social media, augmented reality, artificial intelligence, etc.) to boost organizational performance, lure and engage in customers, strengthen customer relationships, and reduce cost (Hajli and Featherman 2017a). The emergence of e-commerce not only benefits organizations but also significantly affects customer behaviours. E-commerce hugely improves customers' shopping experience, including fast, convenient, cheap, and safe shopping environment and informed decision choices (Xiao and Benbasat 2014).

With modern technologies, the F&B industry has paid more and more attention to this topic. For example, Penco et al. (2020) argued that with mobile augmented reality technology, Italian brands could be more internationalized, enhance better customer relationships, and thus create a better e-commerce environment. Also, in order to investigate e-loyalty in the context of Italian grocery, Faraoni et al. (2019) suggested constructs of security, privacy, and design of grocery store websites can promote an e-commerce environment. Furthermore, in e-commerce, a strategic framework was provided by Dello Stritto and Schiraldi (2013), which investigated the F&B e-supply chain management.

Though there is a growing body of research that started looking at e-commerce in the F&B industry, few studies investigated innovative technologies (e.g., ICTs) in helping and improving the F&B industry. Furthermore, though both developed and developing countries try to establish and encourage e-commerce and innovative technologies to help entrepreneurship activities, there is limited research focus on developing countries.

### *2.1.3 Social commerce and e-commerce in the food and beverage industry*

With the popularity of Web 2.0 and the advancement of ICTs, the topic of social commerce has been gained much attention (Hajli 2015; Lin et al. 2019). Social commerce is rooted in e-commerce and developed by the use of social media (Hajli 2014b). It refers to "any commercial activities facilitated by or conducted through the broad social media and Web 2.0 tools in consumers' online shopping processes or business' interactions with their customers" (Lin et al. 2017, p. 191). Social commerce explores the interplay between social media-supported business activities and their business value (Lin et al. 2019). It provides an excellent tunnel for both marketers and consumers (Hajli 2019a) – since social commerce allows consumers can chat with other consumers in various types of social media (e.g., forums, instant messages, etc.), rate and review products they bought, share their experiences and provide recommendations to their whole social networks, this provides two-way communication with customers and builds a great e-commerce environment. Social commerce not only benefits customers but also provides advantages for organizations, including strengthening customer relationship (Hajli 2014a), develop word of mouth (Hajli et al. 2014), increase profits and reduce cost reduction (Featherman and Hajli 2016), co-create brand values (Hajli et al. 2017a; Lin et al. 2019; Nadeem et al. 2020a; Tajvidi et al. 2020; Tajvidi et al. 2017; Tajvidi et al. 2021), and enhance an advanced and ethical e-commerce environment (Hajli 2018; Nadeem et al. 2019; Nadeem et al. 2020b; Wang et al. 2019; Wang et al. 2020). The topic of social commerce is not new for the F&B domain. For example, with the guidance of impulsive

buying, Chung et al. (2017) investigated two values (hedonic and utilitarian) in impulsive buying in the context of social commerce. They found that impulsiveness is a significant factor contributing to two types of shopping values (hedonic and utilitarian) in the social commerce environment. Furthermore, it was found that electronic word of mouth (E-WOM) and social media significantly influence customers' buying behaviours in a social commerce environment (Kumar, Konar, & Balasubramanian, 2020). In general, the development of Web 2.0 technologies build and flourish social commerce, which has significantly affected customers' behaviours in the F&B industry.

As mentioned above, the arguments help us develop our research model, as shown in Figure 1.

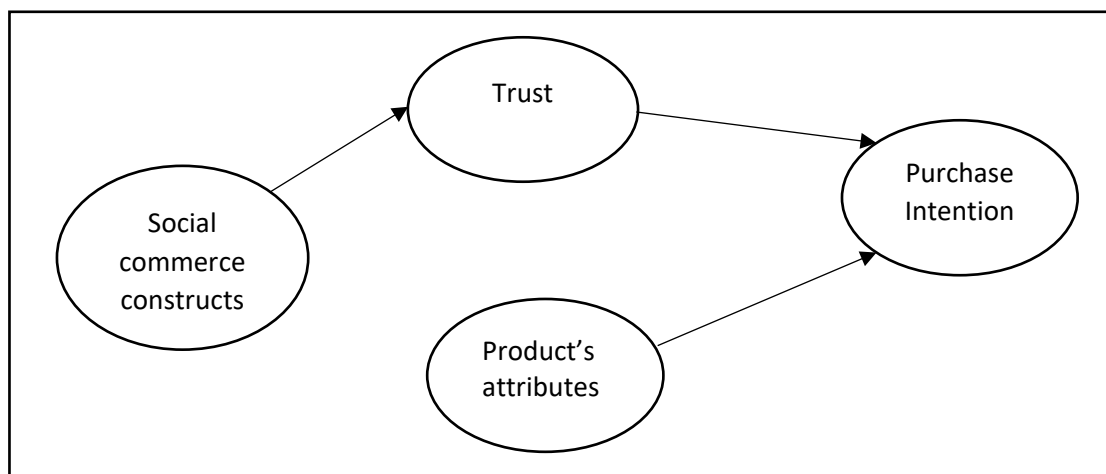


Figure. 1. Research Model

## 2.2 Hypothesis development

Social commerce constructs are first introduced by Hajli (2015), which refers to "...are social platforms which have emerged from Web 2.0 and empowered consumers to generate content and share their experiences." (Hajli 2015, p. 184). There are three factors related to social commerce constructs: ratings and reviews, recommendations and referrals, and forums



and communities. Specifically, previous research has shown that ratings and reviews positively affect trust (Ba and Pavlou 2002). In the environment of social commerce, customers rely on more recommendations and referrals to make decisions since they don't have physical interaction with products online. Some researchers found that customers' recommendations promote a high level of trust (Turcotte et al. 2015). Furthermore, Hajli (2014b) discovered that customers interact in various product forums, and communities can increase trust. Thus, social commerce is expected to have a positive association with trust in social media. Therefore, we propose:

***Hypothesis 1 (H1):*** Social commerce constructs have a positive effect on trust in social media

Trust has long been considered a critical factor in e-commerce (McKnight et al. 2002). Trust can be defined as "the willingness of a party (trustor) to be vulnerable to the actions of another party (trustee) based on the expectation that the other (trustee) will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party (trustee)" (Mayer et al. 1995, p. 712). As argued by Wang et al. (2019), in the context of social commerce, customers are trustees while companies are trustors.

The transactions in social commerce do not involve physical interactions or only between customers and firms, but focuses mainly on social interactions and content generation. . It mainly focuses on social interactions and content generation in social media (Bazi et al. 2019). Therefore, unlike trust in e-commerce social commerce trust works on customer social interaction with firms and other customers. Consumers' trust in the social commerce environment is based on the online shopping experience, representing confidence in certain attributes of the company. Previous studies suggest that trust in social media has a significantly positive influence on buying intention and behaviours. Hajli (2014b) also suggested that social

media usage influences customers' trust, which can increase their buying intention. Thus, we propose the following hypothesis:

**H2:** Trust in social media has a positive effect on purchase intention.

Existed research shows that a product's attributes (e.g., price, information, quality, etc.) positively affect purchase intention (Lee et al. 2017). For example, in order to understand the main factors that contribute purchase intention on lodging websites, Nisar et al. (2019) found that factors of lodging attributes, including perceived lodging value, perceived lodging price, lodging information, and online lodging reviews, all positively influence customers' purchase intention. In the F&B industry domain, product attributes (package colour and nutrition content labels) can directly influence purchase intention and affect healthiness perception. Therefore, based on previous results, a positive relationship between a product's attributes and purchase intention can be expected. Thus, the following hypothesis is formulated:

**H3:** Product's attributes have a positive effect on purchase intention.

### **3.0 Methodology**

#### *3.1 Data Collection*

An online survey was developed using Google Forms which was employed to collect data from social commerce users who have had past experiences purchasing food-related products. A pilot study was conducted with five respondents testing for face validity and content validity. The pilot study leads to minor adjustments in some questions phrasing. For the actual study, to reach the right target respondents, around 280 respondents living in Malaysia were identified through the judgement sampling technique to undertake the survey. 215 responses were received, and upon data cleansing and screening, 200 responses were used for data analysis. Respondents from Malaysia were chosen for this study due to its nature of being food heaven where many customers resort to online food purchases through platforms

such as FoodPanda and GrabFood, being the two most used app for food delivery orders in Malaysia as of September 2021. This scenario is even more apparent when there is a pandemic crisis, such as the Covid-19. The respondents were categorized into several factors of gender, age, education level, and duration of Social Commerce use. The sample profile of respondents is as shown in Table 1.

Table 1. Sample Profiles

	%
Gender	
Male	48.5
Female	51.5
Age	
18 - 22	53.5
23 - 27	28.4
28 - 32	6.0
32 - 37	9.5
38 - 42	1.5
43 and above	1.0
Education Level	
Undergraduate	75.5
Master	11.0
PhD	5.5
Others	8.0
For how long have you been using Social Commerce platforms?	
Less than 6 months	14.0
More than 6 months	10.5
More than 1 year	19.0
More than 5 years	56.5

### *Measurement*

All of the measures in the current study were adapted from past literature, and a seven-point Likert scale was used to allow the individuals to express their stand.

## **4.0 Data Analyses and Results**

This study used Smart PLS version 3.0 to perform data analysis. PLS is a powerful analytical tool for studying new and causal models, including multiple constructs and measures

besides being appropriate for exploratory research (Chin 1998). Fornell and Larcker (1981) affirm that the PLS method does not need a large sample or normally distributed multivariate data. As far as our study concerns, all items of our study constructs show good internal consistency (Table 2). Each measurement scale was assessed as being reliable because all the Cronbach's Alpha (CA) reported a value higher than the recommended threshold, at 0.70 as suggested by (Nunnally 1978).

Table 2. Constructs and measurement items

Constructs	Measurement items	Factor Loading	CA	AVE	CR
Social Commerce Constructs (SCC)	SCC1: I will ask my peers on my favourite online community to provide me with their suggestions before making food purchases.	0.793	0.770	0.690	0.851
	SCC2: I am willing to recommend a reputable food brand on my favourite online community that is worth buying to my peers.	0.849			
	SCC3: I am willing to share my own food buying experience with my favourite online community through ratings and reviews.	0.805			
	SCC4: I would like to use members' online recommendations on my favourite online community when making food purchases.	0.715			
Trust (TR)	TR1: I think my favourite online communities assert high integrity.	0.713	0.897	0.686	0.918
	TR2: If I were to discuss my favourite online communities with others, I would probably say positive things.	0.781			
	TR3: My favourite online community is a good quality platform for buying food products.	0.735			
	TR4: I have full confidence in my favourite online communities.	0.775			
	TR5: My favourite online community is a reliable marketplace.	0.828			
	TR6: My favourite online community is a responsible online community marketplace.	0.822			

	TR7: My favourite online community is a dependable online community marketplace	0.808			
	TR8: I do not doubt the trustworthy of my favourite online community.	0.830			
Purchase Intention (PI)	PI1: I have a strong intention to buy on my favourite online community if the product listings are appealing to me.	0.758	0.821	0.629	0.863
	PI2: I have a strong intention to buy on my favourite online community if the product is attractive.	0.707			
	PI3: I have a strong intention to buy on my favourite online community if the company is responsive.	0.802			
	PI4: I have a strong intention to buy on my favourite online community if the company is welcoming.	0.790			
	PI5: The fairness of company on my favourite online community affects my buying decisions.	0.726			
	PI6: A reputable brand affects my intention to buy on my favourite online community.	0.752			
	PI7: I choose to accept the ratings and reviews available online without any hesitation when making food purchases on my favourite online community.	0.702			
	PI8: My favourite online community is my preferred choice of buying.	0.740			
	PI9: I am very likely to buy on my favourite online community.	0.795			
Product's Attributes (PA)	PA1: The type of food products offered on my favourite online community important to me.	0.887	0.909	0.785	0.936
	PA2: The food size serving advertised on my favourite online community important to me.	0.911			
	PA3: The number of food related products marketed on my favourite online community is pertinent to me.	0.861			
	PA4: The location of the food product advertised on my favourite online community is essential to me.	0.864			

CA Cronbach's alpha, AVE average variance extracted, CR composite reliability.

### *Validity and Reliability*

The PLS approach was used to test the reliability and validity of measures (Hair et al. 2006). As a proof of convergent validity, all factor loadings of our study items were above 0.7. In addition, all the AVE, CR, and CA values also reported higher than the recommended threshold value of 0.5, 0.7, and 0.7, respectively (Table 2). Following that, we assessed discriminant validity using Fornell and Larcker (1981) recommended procedure. Table 3 shows that the square root of all AVEs was greater than all of the constructs' correlation, therefore indicating sufficient discriminant validity of constructs.

Table 3. Fornell Larcker

	PA	PI	SCC	TR
PA	0.886			
PI	0.422	0.793		
SCC	0.366	0.334	0.831	
TR	0.454	0.490	0.516	0.828

### *Hypotheses Tests and the Structural Model with Results*

The structural model results are as shown in Figure 2. In this model, we hypothesized that Social Commerce constructs has a significant impact on trust leading to customer's Purchase Intention. Additionally, our study also posited that Product's Attributes has a significant relationship to customer's Purchase Intention. All 3 hypotheses posited were supported in this study (Table 4). R2 values denote the percentage of variance explained for

the dependent variables. In addition, these values also denote the predictive power of the independent variables on dependent variables. 40% of the variance is explained in trust, whereas 70% of the variance is explained for Purchase Intention. Also, the Trust construct turned out to be the most pertinent driver leading to customer's Purchase Intention.

Table 4 Path estimates

Relationship	Hypotheses	Std. Deviation	P-value	
SCC -> TR	H1	0.125	0.005	Supported
TR -> PI	H2	0.073	0.000	Supported
PI -> PA	H3	0.085	0.001	Supported

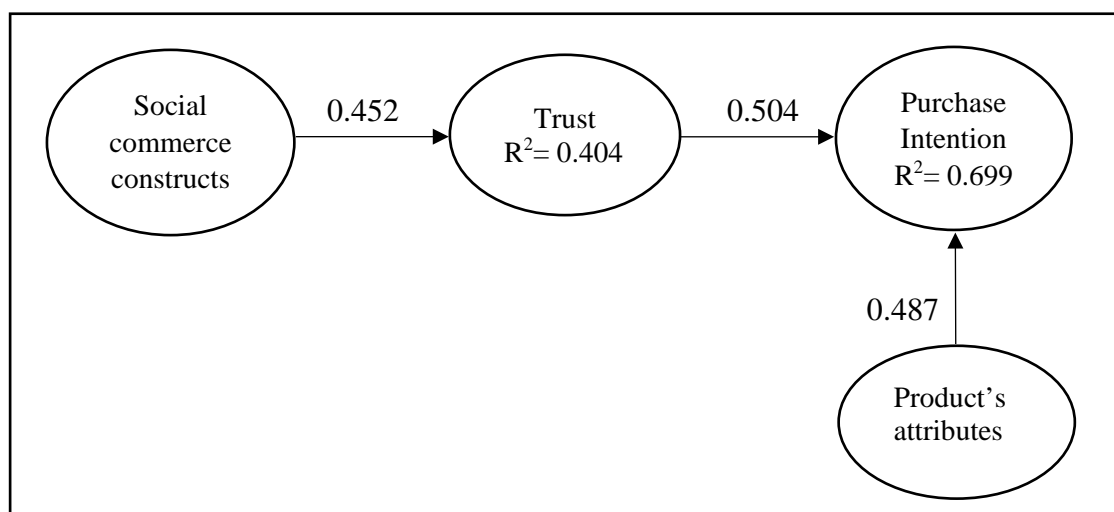


Figure 2. Structural Model Results

## 5.0 Discussion

Drawing on theoretical foundations and empirical evidence from e-commerce, ICTs, entrepreneurship, and the food and beverage industry, this study aims to investigate the role of new ICTs, such as e-commerce to develop entrepreneurial activities. The study looked at how the product's attributes and social commerce constructs alongside trust in customers' purchase

intentions. With the help of social commerce and new forms of information technologies (i.e., ICTs in this study), social media platforms have become a pivotal network for product purchases for users' networks. Social media engagement empowers SMEs to reach their target audience more quickly and effectively, besides improving their entrepreneurship activities and stimulating customer' purchases. The fact that social commerce is now able to sell products directly through social media networks is a great tool for entrepreneurs.

In this study, it was found that more than 50% of the respondents have been using social commerce platforms for more than 5 years. This statistic is a clear indication that a large number of users can be found on social media. A social commerce solution that converts social media engagement into sales should therefore, be implemented to convert social commerce users into consumers. For this, pertinent factors or drivers are crucial for promising purchase intention, which this study addresses. In this study, we investigated the role of social commerce constructs, trust, and product's attributes in the context of social commerce. We tested our research by conducting an online survey method. We tested our hypotheses by applying the PLS analysis and our study affirms that; i. social commerce constructs has a positive effect on trust in social media, ii. trust in social media has a positive effect on purchase intention, and iii. product's attributes have a positive impact on purchase intention. The empirical results support all the hypotheses, indicating that all three aspects: trust, social commerce constructs, and products' attributes significantly determine the online purchase intention behaviour. The results of this study illustrate that customers' interactions and purchase behaviours in social commerce and ICTs environment is developed through a dynamic and highly complex interaction process. These findings extend previous social commerce studies (e.g., Hajli 2015; Hajli 2019a; Lin et al. 2017; Nisar et al. 2019) and highlighted the role of social commerce constructs, trust, and product's attributes in promoting marketing activities and foster strong customer relationship.



### *5.1 Theoretical Implications*

This research makes essential theoretical contributions by conceptualizing and developing a novel empirical model that captures key features of social commerce and investigates some other vital factors (trust, product's attributes) in the e-commerce environment to explore possible ICTs-related entrepreneurial opportunities in the F&B industry. With the guidance of entrepreneurship, social commerce and e-commerce research, this study enhances and extends the understandings of the importance role of social commerce in the F&B industry, as the limited focus in this research field.

In addition, although F&B domain researchers have paid much interest to the role of e-commerce and social commerce in developing and enhancing entrepreneurship activities, rarely have they been considered limited research investigate this research stream. This study can be one of the pioneers to bring the significance role of social commerce and ICTs in the F&B research. In echoing previous calls for increased attention to the role of social commerce across different disciplines (see review of Busalim and Hussin (2016)), our study advances previous research by drawing attention to the social commerce, which provides a novel lens for understanding online retailers' behaviors and management of their daily online transactions.

Entrepreneurship and social commerce development in the F&B industry is exciting research issues in the field of ICTs. Given the popularity of food and beverage social commerce sites, social commerce has grown fast in recent years. So, F&B companies must make more efforts to innovate in a social commerce environment. Social commerce requires innovative entrepreneurship strategies to create a better social and shopping experience for customers. For example, in the context of canned food, Björklund et al. (2020) applied the notion of experimentation and provided an expanded entrepreneurial solution to address the pandemic of COVID-19. In addition, in the context of social commerce, Kumar et al. (2020) found that applying social media can play a significant positive role in customers' purchase

intentions. Broadly, our study contributes to existing literature on F&B research domain by showing that social commerce should be embraced and to gain a more complete understanding of online transactions in the F&B industry.

### *5.2 Practical Implications*

This study heavily focuses on introducing the role of social commerce to the F&B research domain and to explain why and how customers develop their online purchase behaviours. Our findings help organizations and SMEs pay attention to various product attributes (e.g., prices, information, quality, etc.) and need to build and strengthen trustworthiness between customers. Therefore, F&B industries and SMEs are suggested to pay adequate attention customer's trust from a holistic view. In addition, our results highlighted that social commerce constructs can significantly influence customer's trust. As such, organizations need to place more emphasis on social commerce to reap optimum benefits.

F&B companies and SMEs can utilize this research to identify the drivers of customers' purchase behaviours. By doing so, companies can better understand their target customers and marketing segments. As such, this model can be regarded as a tool to help F&B companies to diagnose marketing and performance gaps.

Furthermore, this research can provide one critical guidance for the F&B companies especially in developing countries. Few studies have been examined the role of social commerce in the developing countries. As low resources available for F&B companies from developing countries to deploy different marketing strategies to stimulate consumers' purchase behaviours, we believe this research can fill this gap for providing guidelines for F&B companies in developing regions.

In summary, our study contributes to ICTs literature by identifying the critical role of social commerce constructs, trust, and product's attributes as key factors for promoting social

commerce and for the relationships between each. This study can be one of the pioneers of entrepreneurship need for SMEs in the context of social commerce.

### *5.3 Limitations and Further Research Directions*

We draw attentions some limitations that can be leveraged to inform future research. First, it was a cross-sectional study carried out in Malaysia. Future research should validate the findings from this study by using other samples in different places, including other developing countries. This is particularly because literature has affirmed that consumer's attitude towards a specific behaviour or particular technology is strongly influenced by culture, which has an effect on attitude (Besbes et al. 2016). Second, this research identifies the critical role of social commerce constructs, trust, and product's attributes as key factors for promoting social commerce and for the relationships between each. However, regarding to the research domain of online purchase and IT adoption, there are also some other factors that relate to these relationships, such as hedonic factors, knowledge, and perceived benefits and risks. Future research may attempt to overcome this limitation by including more related factors in this phenomenon. Second, data for this study were collected in a set period of time, specifically during the COVID-19 Conditional Movement Control Order (CMCO) period where findings of our study may be winged towards consumers purchasing online due to movement restrictions. Future studies should test this model in a longitudinal manner involving more users.

### **References**

- Agarwal, R., Animesh, A., and Prasad, K. 2009. "Research Note—Social Interactions and the “Digital Divide”: Explaining Variations in Internet Use," *Information Systems Research* (20:2), pp. 277-294.
- Akintelu, S. O., Ireferin, I. A., and Akarakin, J. B. 2016. "Factors Affecting the Adoption of Ict on Project Planning in the Nigerian Food and Beverage Industry," *Journal of Management & Sustainability* (6:1), p. 163.
- Ba, S., and Pavlou, P. A. 2002. "Evidence of the Effect of Trust Building Technology in Electronic Markets: Price Premiums and Buyer Behavior," *MIS Quarterly* (26:3), pp. 243-268.

- Barba-Sánchez, V., and Jiménez-Zarco, A. 2007. "Drivers, Benefits and Challenges of Ict Adoption by Small and Medium Sized En-Terprises (Smes): A Literature Review," *Problems and Perspectives in Management* (5:1), pp. 103-114.
- Bazi, S., Hajli, A., Hajli, N., Shanmugam, M., and Lin, X. 2019. "Winning Engaged Consumers: The Rules of Brand Engagement and Intention of Co-Creation in Social Commerce," *Information Technology & People* (33:2), pp. 456-476.
- BBCNews. 2020. "Coronavirus: Five Ways the Outbreak Is Hitting Global Food Industry." Retrieved 12/22/2020, 2020
- Berthene, A. 2019. "How Amazon's Whole Foods Acquisition Changed the Grocery Industry." Retrieved 12/25/2020, 2020
- Besbes, A., Legohérel, P., Kucukusta, D., and Law, R. 2016. "A Cross-Cultural Validation of the Tourism Web Acceptance Model (T-Wam) in Different Cultural Contexts," *Journal of International Consumer Marketing* (28:3), pp. 211-226.
- Björklund, T. A., Mikkonen, M., Mattila, P., and van der Marel, F. 2020. "Expanding Entrepreneurial Solution Spaces in Times of Crisis: Business Model Experimentation Amongst Packaged Food and Beverage Ventures," *Journal of Business Venturing Insights* (14:1), p. e00197.
- Brady, M., Saren, M., and Tzokas, N. 2002. "Integrating Information Technology into Marketing Practice—the It Reality of Contemporary Marketing Practice," *Journal of Marketing Management* (18:5-6), pp. 555-577.
- Brynjolfsson, E., and Saunders, A. 2009. *Wired for Innovation: How Information Technology Is Reshaping the Economy*. Mit Press.
- Busalim, A. H., and Hussin, A. R. C. 2016. "Understanding Social Commerce: A Systematic Literature Review and Directions for Further Research," *International Journal of Information Management* (36:6), pp. 1075-1088.
- Chen, Y., Wang, Y., Nevo, S., Benitez-Amado, J., and Kou, G. 2015. "It Capabilities and Product Innovation Performance: The Roles of Corporate Entrepreneurship and Competitive Intensity," *Information & Management* (52:6), pp. 643-657.
- Chin, W. W. 1998. "The PIs Approach for Structural Equation Modelling." New York: Lawrence Erlbaum Associates.
- Chung, N., Song, H. G., and Lee, H. 2017. "Consumers' Impulsive Buying Behavior of Restaurant Products in Social Commerce," *International Journal of Contemporary Hospitality Management* (29:2), pp. 709-731.
- Dello Stritto, G., and Schiraldi, M. M. 2013. "A Strategy Oriented Framework for Food and Beverage E-Supply Chain Management," *International Journal of Engineering Business Management* (5:1:2), pp. 5-50.
- Faraoni, M., Rialti, R., Zollo, L., and Pellicelli, A. C. 2019. "Exploring E-Loyalty Antecedents in B2c E-Commerce," *British Food Journal* (121:2), pp. 574-589.
- Featherman, M. S., and Hajli, N. 2016. "Self-Service Technologies and E-Services Risks in Social Commerce Era," *Journal of Business Ethics* (139:2), pp. 251-269.
- Fornell, C., and Larcker, D. F. 1981. "Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics." Sage Publications Sage CA: Los Angeles, CA.
- Hafkin, N. J., and Taggart, N. 2001. *Gender, Information Technology, and Developing Countries: An Analytic Study*. Office of Women in Development, Bureau for Global Programs, Field Support ....
- Haghighi, N. F., Hajihoseini, H., Nargesi, G. R., and Bijani, M. 2018. "Gap Analysis of Current and Desired States of Entrepreneurship Development Components in the Field of Icts in Iran," *Technology in Society* (54:1), pp. 101-110.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., and Tatham, R. L. 2006. "Multivariate Data Analysis: Pearson Prentice Hall," *Upper Saddle River, NJ* (1:1), pp. 1-816.
- Hajli, M. N. 2014a. "The Role of Social Support on Relationship Quality and Social Commerce," *Technological Forecasting and Social Change* (87:1), pp. 17-27.

- Hajli, M. N. 2014b. "A Study of the Impact of Social Media on Consumers," *International Journal of Market Research* (56:3), pp. 387-404.
- Hajli, N. 2015. "Social Commerce Constructs and Consumer's Intention to Buy," *International Journal of Information Management* (35:2), pp. 183-191.
- Hajli, N. 2018. "Ethical Environment in the Online Communities by Information Credibility: A Social Media Perspective," *Journal of Business Ethics* (149:4), pp. 799-810.
- Hajli, N. 2019a. "The Impact of Positive Valence and Negative Valence on Social Commerce Purchase Intention," *Information Technology & People* (1:1).
- Hajli, N. 2019b. "Value Co-Creation Strategy in the Social Commerce Era," *Journal of Strategic Marketing* (27:4), pp. 281-282.
- Hajli, N. 2020. "Social Commerce and the Future of E-Commerce," *Computers in Human Behavior* (108), p. 106133.
- Hajli, N., and Featherman, M. S. 2017a. "Social Commerce and New Development in E-Commerce Technologies," *International Journal of Information Management* (37:3), pp. 177-178.
- Hajli, N., and Featherman, M. S. 2017b. "Social Commerce and New Development in E-Commerce Technologies," *International Journal of Information Management* (37:3), pp. 177-178.
- Hajli, N., Lin, X., Featherman, M., and Wang, Y. 2014. "Social Word of Mouth: How Trust Develops in the Market," *International Journal of Market Research* (56:5), pp. 673-689.
- Hajli, N., Shanmugam, M., Papagiannidis, S., Zahay, D., and Richard, M.-O. 2017a. "Branding Co-Creation with Members of Online Brand Communities," *Journal of Business Research* (70), pp. 136-144.
- Hajli, N., and Sims, J. 2015. "Social Commerce: The Transfer of Power from Sellers to Buyers," *Technological Forecasting and Social Change* (94), pp. 350-358.
- Hajli, N., Sims, J., Zadeh, A. H., and Richard, M.-O. 2017b. "A Social Commerce Investigation of the Role of Trust in a Social Networking Site on Purchase Intentions," *Journal of Business Research* (71), pp. 133-141.
- Kumar, J., Konar, R., and Balasubramanian, K. 2020. "The Impact of Social Media on Consumers' Purchasing Behaviour in Malaysian Restaurants," *Journal of Spatial and Organizational Dynamics* (8:3), pp. 197-216.
- Lee, W.-I., Cheng, S.-Y., and Shih, Y.-T. 2017. "Effects among Product Attributes, Involvement, Word-of-Mouth, and Purchase Intention in Online Shopping," *Asia Pacific Management Review* (22:4), pp. 223-229.
- Lin, X., Li, Y., and Wang, X. 2017. "Social Commerce Research: Definition, Research Themes and the Trends," *International Journal of Information Management* (37:3), pp. 190-201.
- Lin, X., Wang, X., and Hajli, N. 2019. "Building E-Commerce Satisfaction and Boosting Sales: The Role of Social Commerce Trust and Its Antecedents," *International Journal of Electronic Commerce* (23:3), pp. 328-363.
- Lipsman, A. 2019. "Grocery Ecommerce 2019: Online Food and Beverage Sales Reach Inflection Point." Retrieved 12/19/2020, 2020, from <https://www.emarketer.com/content/grocery-ecommerce-2019>
- Mayer, R. C., Davis, J. H., and Schoorman, F. D. 1995. "An Integrative Model of Organizational Trust," *Academy of Management Review* (20:3), pp. 709-734.
- McKnight, D. H., Choudhury, V., and Kacmar, C. 2002. "Developing and Validating Trust Measures for E-Commerce: An Integrative Typology," *Information Systems Research* (13:3), pp. 334-359.
- Mohsin, M. 2020. "0 Ecommerce Trends That You Need to Know in 2021." Retrieved 12/25/2020, 2020, from [https://www.oberlo.com/blog/ecommerce-trends#:~:text=Online%20shopping%20is%20one%20of,2021%20\(Statista%2C%202019\).&text=With%20the%20increasing%20popularity%20of,are%20turning%20to%20online%20shopping.](https://www.oberlo.com/blog/ecommerce-trends#:~:text=Online%20shopping%20is%20one%20of,2021%20(Statista%2C%202019).&text=With%20the%20increasing%20popularity%20of,are%20turning%20to%20online%20shopping.)

- Nadeem, W., Juntunen, M., Hajli, N., and Tajvidi, M. 2019. "The Role of Ethical Perceptions in Consumers' Participation and Value Co-Creation on Sharing Economy Platforms," *Journal of Business Ethics*, pp. 1-21.
- Nadeem, W., Juntunen, M., Shirazi, F., and Hajli, N. 2020a. "Consumers' Value Co-Creation in Sharing Economy: The Role of Social Support, Consumers' Ethical Perceptions and Relationship Quality," *Technological Forecasting and Social Change* (151), p. 119786.
- Nadeem, W., Khani, A. H., Schultz, C. D., Adam, N. A., Attar, R. W., and Hajli, N. 2020b. "How Social Presence Drives Commitment and Loyalty with Online Brand Communities? The Role of Social Commerce Trust," *Journal of Retailing and Consumer Services* (55), p. 102136.
- Nazir, S., and Pinsonneault, A. 2012. "It and Firm Agility: An Electronic Integration Perspective," *Journal of the Association for Information Systems* (13:3), p. 2.
- Nisar, T. M., Hajli, N., Prabhakar, G., and Dwivedi, Y. 2019. "Sharing Economy and the Lodging Websites: Antecedents and Mediators of Accommodation Purchase Intentions," *Information Technology and People*.
- Nunnally, J. C. 1978. "Psychometric Theory 2nd Ed." Mcgraw hill book company.
- Pan, G., Pan, S.-L., and Lim, C.-Y. 2015. "Examining How Firms Leverage It to Achieve Firm Productivity: Rbv and Dynamic Capabilities Perspectives," *Information & Management* (52:4), pp. 401-412.
- Penco, L., Serravalle, F., Profumo, G., and Viassone, M. 2020. "Mobile Augmented Reality as an Internationalization Tool in the "Made in Italy" Food and Beverage Industry," *Journal of Management and Governance* (1:1), pp. 1-31.
- Soriano, D. R., Mas-Tur, A., and Roig-Tierno, N. 2015. "New Icts in Entrepreneurship: Which Component of Intellectual Capital Should We Be Promoting?," *European Conference on Intangibles and Intellectual Capital: Academic Conferences International Limited*, p. 298.
- Suraajudeen, A. O. 2017. "Information and Communication Technologies (Icts): A Veritable Entrepreneurial Tool for Poverty Reduction among Nigeria Teachers," *International Journal of Innovative Technology Integration in Education* (1:1), pp. 90-96.
- Tajvidi, M., Richard, M.-O., Wang, Y., and Hajli, N. 2020. "Brand Co-Creation through Social Commerce Information Sharing: The Role of Social Media," *Journal of Business Research* (121), pp. 476-486.
- Tajvidi, M., Wang, Y., Hajli, N., and Love, P. E. 2017. "Brand Value Co-Creation in Social Commerce: The Role of Interactivity, Social Support, and Relationship Quality," *Computers in Human Behavior* (1:1), pp. 1-8.
- Tajvidi, M., Wang, Y., Hajli, N., and Love, P. E. D. 2021. "Brand Value Co-Creation in Social Commerce: The Role of Interactivity, Social Support, and Relationship Quality," *Computers in Human Behavior* (115), p. 105238.
- TechnologyWatch. 2020. "The Importance of Ict in Food Security ". The importance of ICT in food security p. 5.
- Turban, E., King, D., Lee, J., and Viehland, D. 2002. "Electronic Commerce: A Managerial Perspective 2002," *Prentice Hall: ISBN 0 (13:975285)*, p. 4.
- Turcotte, J., York, C., Irving, J., Scholl, R. M., and Pingree, R. J. 2015. "News Recommendations from Social Media Opinion Leaders: Effects on Media Trust and Information Seeking," *Journal of Computer-Mediated Communication* (20:5), pp. 520-535.
- Wang, X., Tajvidi, M., Lin, X., and Hajli, N. 2019. "Towards an Ethical and Trustworthy Social Commerce Community for Brand Value Co-Creation: A Trust-Commitment Perspective," *Journal of Business Ethics* (1:1), pp. 1-16.
- Wang, X., Tajvidi, M., Lin, X., and Hajli, N. 2020. "Towards an Ethical and Trustworthy Social Commerce Community for Brand Value Co-Creation: A Trust-Commitment Perspective," *Journal of Business Ethics* (167:1), pp. 137-152.

- Xiao, B., and Benbasat, I. 2014. "Research on the Use, Characteristics, and Impact of E-Commerce Product Recommendation Agents: A Review and Update for 2007–2012," in *Handbook of Strategic E-Business Management*. Springer, pp. 403-431.
- Yunis, M., Tarhini, A., and Kassar, A. 2018. "The Role of Ict and Innovation in Enhancing Organizational Performance: The Catalysing Effect of Corporate Entrepreneurship," *Journal of Business Research* (88), pp. 344-356.
- Zhang, F., and Li, D. 2018. "Regional Ict Access and Entrepreneurship: Evidence from China," *Information & Management* (55:2), pp. 188-198.