

PAPER • OPEN ACCESS

Mobile Commerce Application Moving Towards Sustainability

To cite this article: N S A Samad *et al* 2022 *IOP Conf. Ser.: Earth Environ. Sci.* **1102** 012032

View the [article online](#) for updates and enhancements.

You may also like

- [Evaluation of e-commerce services quality using Fuzzy AHP and TOPSIS](#)
A Ishak, R Ginting and W Wanli
- [Building the Design of E-Commerce](#)
E S Soegoto, M A S Marbun and F Dicky
- [M-Commerce application acceptance analysis using Technology Readiness Index \(TRI\) model in Kuningan Regency](#)
Tri Septiar Syamfithriani, Nita Mirantika, Daswa et al.



The Electrochemical Society
Advancing solid state & electrochemical science & technology

243rd ECS Meeting with SOFC-XVIII

Boston, MA • May 28 – June 2, 2023

**Abstract Submission Extended
Deadline: December 16**

[Learn more and submit!](#)

Mobile Commerce Application Moving Towards Sustainability

N S A Samad^{1*}, S F Muhamad¹, A H A Rahman¹, C Sulaiman², N Othman³ and N F Shaari⁴

¹Faculty of Entrepreneurship and Business, Universiti Malaysia Kelantan City Campus, 16100 Kota Bharu, Malaysia

²Faculty of Earth Science, Universiti Malaysia Kelantan Jeli Campus, 17600 Jeli, Kelantan, Malaysia

³Faculty of Business and Management, Universiti Teknologi MARA (UiTM), Selangor, Malaysia

⁴Faculty of Business and Management, Universiti Teknologi MARA (UiTM), Segamat Campus Johor Branch, Malaysia

*E-mail: nursyafiqah.as@umk.edu.my

Abstract. Recent technological advancement has made mobile commerce applications a sustainable business tool due to the capability of providing long-term economic growth without negatively impacting the community's social, environmental, and cultural aspects. Nonetheless, the attention paid to mobile commerce's role in facilitating firms' economic growth among Malaysian entrepreneurs has been barely noticeable. Most entrepreneurs are not convinced to transform their main business channels from conventional to online (mobile) modes due to the lack of financial information and awareness of environmental concerns. Therefore, this study aims to examine the financial performance and mobile transport usage trends of mobile commerce applications. A quantitative research design through an online survey was applied for data collection, with 380 samples were analysed using IBM SPSS Statistic 26. The study found that mobile commerce users (entrepreneurs) agree that there has been an increasing trend in the number of customers, sales revenue, and monthly profit, at 99.2%, 99.1% and 96.6%, respectively. The rising trend in financial performance proves that mobile commerce is vital for a firm's economic growth. The study also showed that the frequency of mobile transport usage showed a decreasing trend at 27% once the mobile commerce application is actively used among entrepreneurs. The decreasing trend of mobile transport usage can reduce carbon dioxide emissions and minimize individual movement, benefiting the environment and society. Hence, the study can provide invaluable insights to entrepreneurs and escalate their confidence levels in using mobile commerce applications as their primary business channels. Technology engagement in businesses will help entrepreneurs sustain their businesses, spur innovation among sellers, stimulate social benefits, increase the economy, and reduce environmental damage in the long run. In conclusion, mobile commerce is an efficient technological advancement which contributes to firm and country sustainability.

1. Introduction

Mobile commerce is the direct use of a mobile device and a wireless access network in conjunction with a commercial transaction and other customary activities. [1]. Mobile devices and wireless networks seem complementary for mobile commerce usage. In Malaysia, [2] stated that most Malaysians have mobile devices for communication purposes. The increasing trend in mobile device usage showed an



excellent indicator of the growth of mobile commerce. In business, mobile commerce can be used by both entrepreneurs and customers. Both of them can enjoy the benefits in terms of convenience, personalised offers, and faster business experiences have prompted [3].

In the context of sustainability, the application of mobile commerce by entrepreneurs and customers may be contributed to the economic, social and environmental benefits. For the economic and social, it involves ease of payment, wider product recognition and borderless business, which may help the entrepreneur's revenue and ease the customer to get and pay for the goods. In business, repurchase intentions are highly potential through mobile commerce, which attained long-term viability and profit [3]. Other than that, mobile commerce may reduce the harm to the environment by minimising the physical location of the store, the physical movement using any transportation modes among customers, the number of workers and others. The valuable resources can be saved by reducing environmental damage. [4] stated that implementing any modern technological development, including mobile commerce in process management, requires business models that take sustainability and social responsibility into account. This means that the business models can be classified as sustainable and are referred to as "sustainable business models" (SBMs) because they give businesses a competitive edge without harming society or the environment.

Recent technological advancements have made mobile commerce applications sustainable business tools as they can provide long-term business growth without negatively impacting the community's social, environmental, and cultural aspects. Nonetheless, the attention paid to the role of mobile commerce in facilitating business growth among Malaysian entrepreneurs has been barely noticeable. Most entrepreneurs are not convinced to transform their main business channels from conventional to online or mobile modes, especially rural ones, due to the lack of monetary or financial information [1]. Other than that, [5] believed that lack of awareness of the environmental issue is another factor for not engaging with the sustainability practice (mobile commerce application). [According to [6], consumers today prefer to purchase environmentally friendly goods. Thus, imperative action should be taken to improve sustainable business practices and operations.

Rural entrepreneurs have a greater obstacle to the transformation than urban entrepreneurs [1]. By showing them how the mobile commerce application would help them financially, these difficulties can be overcome. It's imperative to make a significant departure from the status quo and truly embrace mobile commerce. The business's and the nation's sustainability will be ensured by embracing the digital economy and using mobile commerce as one of the essential instruments for business.

Therefore, the study's objective is to examine the financial performance and mobile transport usage trends of mobile commerce applications. The input in terms of the financial performance and mobile transport usage trend after engaging with the mobile commerce application is essential. It may convince the other entrepreneurs to implement mobile commerce in their business. This study will provide insightful information to entrepreneurs. Most of the previous research about mobile marketing has mainly focused on behavioural intention, determinants, influence, the case study during Covid-19, the role of consumer, consumer experience and others [7] [8] [9] [10]. Consequently, it is anticipated that this study's findings will add to the existing body of knowledge because the empirical studies focused on the financial and environmental impact are sparse.

2. Literature Review

The growth of e-commerce includes mobile commerce, which makes it simple for business owners to increase market share through online sales. Mobile commerce is the use of cellular devices to conduct electronic commercial transactions like ordering goods and services, transferring money, and paying stock (especially mobile phones). Mobile devices and applications are becoming more and more popular in the workplace thanks to ongoing wireless network expansion and enhancement. It develops into a new business trend and is expected to continue expanding in the future. The primary advantages of mobile commerce include the ability to do business through a network that includes online ordering, payment, and distribution of items in order to enhance customer service. One of the advantages of mobile commerce is that it makes business-to-business and business-to-customer communications easier.

[11] asserts that the digital transition opened up new avenues for transactions and business operations, which in turn inspired fresh approaches to value creation. Revenues from mobile commerce

worldwide are doubling every four years and will surpass \$3,418 billion in 2018. German mobile commerce sales increased to 58 billion euros in 2019 while Swiss e-commerce sales increased to 10 billion francs. In Malaysia, the use of mobile commerce is still at early stage and concluded as a not widely used. E-commerce companies are still in the process of experimenting level with the mobile applications. It is important to ensure the user convenient [12].

The use of digital marketing tools boosts online sales. Digital marketing is implicated in digital commerce. Recommending extra goods and equipment on a product page can greatly increase the order value. Online sales are increased via volume discounts and discount codes for subsequent orders. Rewards from loyalty programmes and discount coupons for subsequent purchases can encourage additional client spending and revenue. Providing volume discounts can provide an incentive for webshop users to add a higher amount of products to the basket and increase the order value. [13] mentioned that a discount rate at the first quadrant is needed as an improvement strategy to provide more effective and efficient performance. In addition, it is necessary to secure competitiveness through continuous investment.

In the meantime, "reliability," "interactivity" (comments and reviews), "coupon usage guidelines," "product information," and "comfort after purchase" (exchange, refund, etc.)" are crucial for ensuring client happiness. Furthermore, shopping days can boost internet sales. Surprisingly, 22% of the 300 e-commerce sites surveyed provide special discounts on Cyber Monday and Valentine's Day, and 42% do so on Black Friday. Significant revenue is affected by this offer. Finally, the rise in average basket value results in increased online sales. The relationship between basket value and online revenues, including profits, is favourable as long as fix and overhead expenses stay constant[13].

It is well stated that mobile commerce can provide financial benefits translated into economic benefits. Despite the vital role that mobile commerce can play in increasing financial performance, few scholars have examined the relationship between technology and the environment. [6] indicated that new technological advancements, including mobile commerce, can reduce the carbon footprint when interacting with transportation. The use of mobile commerce has minimized transportation modes, eventually contributing to reducing the emission by 17%, hence reducing the environmental damage.

Sustainable businesses lead today's consumers to become more responsible shoppers. Mobile commerce is a recent technological advancement business tool incorporated with sustainable practices and the ability to create more trust among the customers. The customers feel confident about making any transaction as the business process runs transparently. According to [14], the long-term benefits of ICT use on sustainability can be observed by the decline in the number of physical store locations. [6] also stated that as e-commerce companies continue to make significant improvements to promote sustainability, modern technologies will have a greater long-term good impact on the environment.

The sustainable programme can help online businesses attract customers and set themselves apart from rivals in the competitive business environment of today [6]. Online retailers are modernising their operations to boost productivity while lowering waste and their environmental impact, whether it's by changing their supply chains or their packaging. E-commerce will eventually become greener, faster, and more sustainable due to the technological innovation and sustainable business practices made possible by mobile commerce.

3. Methodology

3.1 Data Collection

Four hundred thirty (430) questionnaires were distributed to the entrepreneurs in Malaysia who had experienced using mobile commerce. The questionnaires were distributed using purposive and convenience sampling. The data was collected over three months, and the completed questionnaires were gathered in June 2021. Out of 430 respondents, 360 completed responses were used for the data analysis, representing a response rate of 83.7%. According to Table 1, 69.7% of the samples were female, and among those, 50% of the mobile commerce merchants were 30 years of age or younger.

Additionally, 47.3 percent of the respondents had a diploma-level degree and a strong educational background. The majority of them (88.9%) make at least RM3001 every month. The vast majority of survey participants began using mobile devices nine years ago. Regarding how frequently they used

mobile commerce for selling and buying, 75.8% of business owners said they did so more than nine times each month. Mobile business is less to be used for the saving purpose.

Table 1. Demographic Profile of the Respondents

N=360	Frequency	Percentage (%)
Gender		
Male	109	30.3
Female	251	69.7
Age (years old)		
Below 20	69	19.2
21 - 30	119	33.0
31 - 40	101	28.1
41 - 50	56	15.6
51 and above	15	4.1
Marital Status		
Married	205	56.9
Single	125	34.7
Divorced	30	8.3
Education Level		
Primary School	14	3.9
PMR	33	9.2
SPM	143	39.7
Diploma/STPM	114	31.7
Degree & Above	56	15.6
Monthly Income		
Less than RM1000	4	1.10
RM1000 to RM2000	7	1.9
RM2001 to RM3000	29	8.1
RM3001 to RM4000	154	42.8
RM4001 and above	166	46.1
Years of using mobile device		
Less than 1 years	4	1.10
1 -3 years	32	8.90
4 – 6 years	44	12.22
7 – 9 years	16	4.44
More than 9 years	284	78.9
Form of Mobile Commerce		
Selling or Purchasing	330	86.8
Money Transfer	30	7.9
Saving	2	0.5
Utilities Bill Payment	4	1.1
Merchant Payment (Debit or8 Credit Card)		2.1
Frequency of Using Mobile Commerce (Monthly)		
Less than three times	32	8.4
3 to 5 times	44	11.6
6 to 8 times	16	4.2
9 to 11 times	284	74.7
More than 11 times	4	1.1

3.2 Research Questionnaire Design

The questionnaire created for the current study was inspired by earlier research and modified from the study by [12] that focused on the mobile commerce users. To accommodate the various ethnic communities in Malaysia and their preferred languages, it was created in both Malay and English. A likert scale with five possible responses from "strongly disagree" to "strongly agree" was employed.

There are four sections in the questionnaires. With the help of the demographic questions in Section A, you may learn more about people's gender, age, marital status, level of education, monthly income, and number of years they've used a mobile device. The frequency of mobile commerce usage is covered in Section B and is broken down into five categories. At the same time, Section C consists of the financial performance of mobile commerce with three questions. The question has relied on the estimated number of customers, sales per month and profit per month before and after mobile commerce usage. Section D also consists of the frequency of mobile transport usage before and after the use of mobile commerce. This section implies for the environmental element. The question used a nominal scale (0 and 1) of the data. 0 and 1 represent the frequency of mobile transport used before and after mobile commerce applications decreases and increase.

4. Finding

Using a descriptive and frequency analysis approach aided by IBM SPSS Statistic 26, the finding of the financial performance and mobile transport usage trends of mobile commerce applications are examined. Table 2 shows that the means for each measurement were 0.7 and above, representing most mobile commerce entrepreneurs choose 1. All of the measures had standard deviations that were less than 1.00, which shows that the range of the mean value was narrow. Additionally, it suggests that respondents generally view this component of the study in this way.

According to Table 3, two measurements are considered in the estimations of mobile commerce applications: financial(financial performance) and environmental (mobile transport usage) perspectives. These two perspectives are essential to convince other entrepreneurs to implement mobile commerce in their business. The number of the customer, sales and profit represent the financial performance. In contrast, the frequency of transport used by mobile commerce entrepreneurs represents the impact of the environmental perspective. 0 indicates the decreasing trends for each measurement, and 1 illustrates the increasing trends.

From the financial perspective, the study found that mobile commerce users agree that there has been an increasing trend in terms of the number of customers, sales revenue, and monthly profit, at 99.2%, 99.1% and 96.6%, respectively. The increasing trend in financial performance proves that mobile commerce is vital for a firm's economic growth.

The study found that the frequency of mobile transport usage for 0 and 1 indicated 27% and 73% respectively. The entrepreneurs were choose 0 meant that they were believed the use of mobile commerce was reduced their frequency of using mobile transport. From the environmental perspective, Table 3 showed that 27% of the entrepreneurs believed the mobile commerce lead to the reducing on the mobile transport usage. The decreasing trend of mobile transport usage can reduce carbon dioxide emissions and minimize individual movement, benefiting the environment and society [15]. In addition, [6] also agreed that the adoption of mobile technology could reduce CO₂ emissions by 0.85%. [16] also firmly believed that the innovative practice, including e-ticketing, intelligent transport, mobile commerce, and any other technological advancement, can help the companies be more efficient in the combinations of networks and routers, promising more sustainable practice.

The study proved that mobile commerce could provide various economic, environmental, and social advantages based on these two findings. The inclusion of these three elements demonstrated that today's advanced technology is moving towards sustainability. It could be vital element in the preparation of management policies to promote sustainable management and practice [17, 18].

Table 2. Descriptive Statistic

	Observation	Mean	Standard Deviation	Min	Max
Number of customers	360	0.9921	0.0883	0	1
Sales	360	0.9800	0.7320	0	1
Profit	360	0.9717	0.1820	0	1
Frequency of Mobile Transport Used	360	0.759	0.3810	0	1

Table 3. Frequency Analysis

Measurement		Frequency	Percent
Number of customer	0	3	0.8
	1	357	99.2
Sales	0	6	1.67
	1	354	98.33
Profit	0	12	3.4
	1	348	96.6
Frequency of Mobile Transport Used	0	98	27
	1	262	73

5. Conclusion

The study examines the financial performance and mobile transport usage trends of mobile commerce applications. The descriptive and frequency analysis were used to achieve the study's objective. The results suggest that mobile commerce application responds to a positive impact on the financial and environmental perspectives. Specifically, the results showed an increasing trend in the financial performance. The use of the mobile commerce could provide positive impact on the environmental performance due to the finding obtained which showed that 27% of the mobile commerce entrepreneurs believed that there are decreasing trend of the mobile transport usage in running their business. Even though the percentage showing for the decreasing trend of mobile transport usage is lower than the increasing trend, but it is relevant since the use of mobile commerce in Malaysia is at embryonic stage and not applied widely yet. The findings suggest that mobile commerce enhances the firm's financial performance and reduces environmental damage.

These effective technologies would aid in streamlining supply chain, management, and planning processes for the spatial movement of goods or services. Policymakers have a chance to expedite the transition to business sustainability by concentrating more on integrating new technology in the commercial sector. Hence, policymakers need to provide the appropriate ways to realize the desired impact in terms of increasing business profit without environmental damage.

6. Limitation and Recommendation for Future Study

This study only considers the trend for the frequency of the mobile transport usage among mobile commerce entrepreneurs to conclude for the environmental performance. The finding will be more informative if the data on the carbon dioxide emission can be collected. Other than that, the study will be more comprehensive if the determinant on the mobile commerce application can be extracted since the use of mobile commerce among Malaysia is still at early stage. This finding can be used for further action to initiate the entrepreneurs' intention towards the use of mobile commerce.

Acknowledgement

The authors thank the research grants UMK Fundamental (UMK-FUND) with project code: R/FUND/A0100/01856A/001/2020/00845.

References

- [1] Samad N S A, Abdullah F A, Yaziz M F A, and Bahari N 2021 The Factors Influencing the Usage of Mobile Commerce among Rural Entrepreneurs in Peninsular Malaysia *International Journal of Interactive Mobile Technologies*, **16** 20
- [2] Kaur K, Salome S, and Muthiah S 2016 Harnessing the power of mobile technology: A look at Malaysian mobile commerce landscape *Research Journal*, 41.
- [3] Chopdar P K, and Balakrishnan J 2020 Consumers response towards mobile commerce applications SOR approach. *International Journal of Information Management*. **53** 102106.
- [4] Di Vaio A, Boccia F, Landriani L, and Palladino R. 2020 Artificial intelligence in the agri-food system: Rethinking sustainable business models in the COVID-19 scenario *Sustainability* **12**(12) 4851.
- [5] Jamaludin S S, Mahayuddin S A, and Hamid S H A 2018 Challenges of integrating affordable and sustainable housing in Malaysia. In *IOP Conference Series: Earth and Environmental Science* 140 1 012001 IOP Publishing.
- [6] Chatti, W 2021 Moving towards environmental sustainability: information and communication technology (ICT), freight transport, and CO2 emissions *Heliyon* **7** 10.
- [7] Chopdar P K and Sivakumar V J 2019 Impulsiveness and its impact on behavioural intention and use of mobile shopping apps: A mediation model. *International Journal of Business Innovation and Research* **19**(1) 29-56.
- [8] Chopdar P K, Paul J, and Prodanova J 2022 Mobile shoppers' response to Covid-19 phobia, pessimism and smartphone addiction: Does social influence matter? *Technological Forecasting and Social Change* **174** 121249.
- [9] Chopdar P K, Lytras M D and Visvizi A 2022 Exploring factors influencing bicycle-sharing adoption in India: a UTAUT 2 based mixed-method approach. *International Journal of Emerging Markets*.
- [10] Belabbes I, Amine A, Oubrich M, Hakmaoui A, and El Amrani S 2022. Towards a Measure of Customer Experience in the Moroccan Telecoms Sector: Scale Development and Validation Study. Available at SSRN 4065589.
- [11] Zumstein D, and Kotowski W 2020 Success Factors of E-Commerce-Drivers of the Conversion Rate and Basket Value. In *18th International Conference e-Society 2020* 43-50.
- [12] El-Ebiary, Y. A. B., Abu-Ulbeh, W., Alaesa, L. Y. A., & Hilles, S. 2018 Mobile Commerce in Malaysia—Opportunities and Challenges. *Advanced Science Letters* **24**(6) 4126-4128.
- [13] Choi B N, and Yang H C 2018 A study on revitalization of revenue through difference of consumer perception of characteristics of mobile social commerce. *Asian Journal of Business Environment* **8**(1) 31-38.
- [14] Salahuddin M, Alam K, and Ozturk I 2016 The effects of internet usage and economic growth on CO2 emissions in OECD countries: a panel investigation. *Renew. Sustain. Energy Rev.* **62** 1226–1235
- [15] Shaari, N. F., Abdul-Rahim, A. S., & Afandi, S. H. M. 2020 Are Malaysian airline passengers willing to pay to offset carbon emissions? *Environmental Science and Pollution Research* **27** (19) 24242-24252..
- [16] Jereb B, Stopka O, Skrucany T 2021 Methodology for estimating the effect of traffic flow management on fuel consumption and CO2 production: a case study of Celje, Slovenia. *Energies* **14** 1673.
- [17] Francis F J, Hassan A, Mohd Afandi S H and Radam A 2019 Incorporating visitors' preferences into the policy framework of a Rainforest Discovery Centre Tourism Review. **75** 779-790.
- [18] Samad N S A, Abdul-Rahim A. S., Afandi S. H. M., and Johari M. M. 202 Factors influencing the public park use in Kuala Lumpur, Malaysia. In *IOP Conference Series: Earth and Environmental Science* **756**(1) 012085. IOP Publishing