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Digital Financial Services Adoption among Entrepreneurs: Evidence for FinTech Education, Innovation, and Local Enterprise Competitiveness

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ABSTRACT

This mixed-method study examined the digital financial services gateways of micro, small, and medium entrepreneurs in Tandag City, Surigao del Sur, Philippines. Using survey data from 300 entrepreneurs and qualitative interview data from 50 participants, the study described the entrepreneurs' socio-demographic profile, status of digital financial services utilization, perceived implementation of digital financial services, reasons for use, challenges encountered, and suggested E interventions. The quantitative findings show that respondents were mostly female (173 or 57.7%), married (161 or 53.7%), college graduates (196 or 65.3%), and sole proprietors (204 or 68.0%). Wholesale and retail trade obtained the highest proportion among business activities (100 or 33.3%), and smartphones were the most frequently used gadgets. GCash ranked first among digital financial services gateways (163), while money transfer ranked first among digital features used (143). Despite this adoption, direct cash remained dominant across several payment categories, and 161 respondents reported no digital financial services training. Perceived implementation of digital financial services was generally high, while reasons for use were generally agreed upon by respondents. Challenges were moderately agreed upon, with lack of digital financial literacy, internet availability, lack of faith, lack of money, phishing, pharming, SIM card swap, spyware, and hacking emerging as major concerns in the original dataset. The qualitative analysis generated three major themes: transactional convenience and accessibility, infrastructural and trust-related barriers, and institutional support for literacy, connectivity, security, and affordability. The findings support the need for SUC-led digital financial literacy initiatives, LGU-financial institution collaboration, improved internet infrastructure, and user protection mechanisms for entrepreneurs.

Keywords: Digital Financial Services, Fintech, Entrepreneurship, MSMEs, Financial Literacy, Tandag City, Philippines
JEL Classifications: G21, L26, O33

1. INTRODUCTION

Digitalization has reshaped financial transactions and entrepreneurial operations. For entrepreneurs, digital financial services are increasingly relevant because they enable cashless transactions, quicker settlement of payments, customer reach, and operational efficiency (Binaluyo et al., 2024). In the Philippine context, this issue is aligned with national digital transformation priorities and the Philippine Creative Industries Development Plan, which emphasizes the integration of digital technologies and innovation into economic and creative development (Department of Trade and Industry, 2024).

The Philippines has substantial digital potential due to the large number of internet users and active mobile connections, while a considerable portion of the population remains offline (DataReportal, 2024). This uneven access is critical for entrepreneurs outside highly urbanized centers, where connectivity, financial literacy, trust, and cybersecurity concerns may affect adoption (Tayo et al., 2016; Vasile et al., 2021).

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For Tandag City, the 2023 and 2024 Cities and Municipalities Competitiveness Index rankings provide a local development context for strengthening innovation, resiliency, infrastructure, and e-governance support (Cities and Municipalities Competitive Index, 2023, 2024).

Prior studies cited in the manuscript associate digital financial inclusion with financial stability, business efficiency, lower transaction costs, improved access to credit, and inclusive economic growth (Aker, Boumnijel, and McClelland, 2014; Cook and McKay, 2015; Sumaylo et al., 2022; Lai et al., 2020). However, the same body of literature also identifies persistent barriers, including digital divides, unreliable infrastructure, affordability, digital illiteracy, fraud, privacy concerns, and lack of trust (Demirgüç-Kunt et al., 2021; Rashid, 2020; Kandpal and Mehrotra, 2019).

This study therefore examined the digital financial services gateways of entrepreneurs in Tandag City, Surigao del Sur, with specific attention to respondents' profile, utilization status, perceived implementation, reasons for use, encountered constraints, and suggested institutional interventions.

2. REVIEW OF RELATED LITERATURE

The literature reviewed in the source manuscript indicates that payment systems have moved rapidly from cash-dominant transactions toward digital and mobile platforms. Digital transactions can reduce administrative and transaction costs, increase transaction speed and security, enhance visibility of economic activity, and improve access to credit and participation in formal economies (Aker et al., 2014; BTCA, 2015; Cook and McKay, 2015; Wright et al., 2017). For SMEs, accessible digital tools can provide technology capabilities that were previously available mainly to large organizations (Yeboah-Boateng and Essandoh, 2014).

Digital financial services are defined in the manuscript as innovative technologies such as internet banking, mobile banking, and mobile payment (Rana et al., 2020). Their relevance intensified during the COVID-19 pandemic, when mobility restrictions and social distancing increased reliance on online payments, transfers, and digital transactions (Kusuma et al., 2022; Gentilini et al., 2021 as cited by Demirgüç-Kunt et al., 2021). Digital financial services can also support government transfers, online purchases, bill payments, and other financial services with limited physical interaction (Pazarbasioglu et al., 2020).

The reviewed literature further shows that adoption depends not only on availability but also on perceived usefulness, perceived ease of use, trust, perceived risk, cost, and government support, which are consistent with the extended Technology Acceptance Model cited in the manuscript (Das and Das, 2020; Ismael et al., 2021). Trust is particularly important because cyber-fraud, phishing, hacking, and weak data protection systems may discourage adoption (Alsayed and Bilgrami, 2017; Kandpal and Mehrotra, 2019; Pi et al., 2012). Perceptions of digital financial services also influence how users understand and evaluate digital financial technologies, suggesting that user perception is an important consideration in digital financial service adoption (Moreno-García et al., 2021). Moreover, other perceptions of digital financial services are also important in understanding users' acceptance and evaluation of digital financial technologies (Moreno-García et al., 2021). The perceived value of mobile financial services can influence users' willingness to adopt and continue using digital financial applications (Karjaluoto et al., 2019). Digital banking and financial technology have expanded the range of innovative products, services, and payment mechanisms available to users (Haralayya, 2021; Budiarti et al., 2021).

The literature also underscores the role of public institutions. Governments and regulatory authorities are expected to support digital financial inclusion through policy, infrastructure, training, consumer protection, and digital literacy programs (Victorino, 2021; Tay et al., 2022). In the context of a State University and College, these findings imply a clear role for research, extension, curriculum enhancement, and community-based digital financial education.

3. METHODOLOGY

The study employed a mixed-method design using quantitative and qualitative approaches. The quantitative component used a self-made questionnaire administered to 300 entrepreneurs in Tandag City. The qualitative component used one-on-one interviews with 50 participants. The instrument gathered information on socio-demographic profile, utilization of digital financial services, reasons for usage, challenges encountered, and suggestions for institutional support.

The target population consisted of 1,336 duly registered and operating commercial businesses based on the list of the Commercial Permits and Licensing Office. The respondents were selected using stratified and systematic sampling. The distribution of respondents was retained from the source manuscript as follows (Table 1).

Quantitative data were analyzed using frequency, percentage, mode, and chi-square test, as reported in the original manuscript. Qualitative data were analyzed thematically from the interview responses. Frequency percentages and ranks were recalculated from the reported frequencies where sufficient grouped data were available. Inferential statistics were rebuilt as reported because the raw cross-tabulation dataset needed to recompute chi-square values was not provided in the manuscript.

The following tables rebuild the image-based quantitative tables into editable Word tables. Frequencies were taken from the

Table 1: Distribution of respondents by enterprise size

Enterprise size	Population	Sample size	Sample %
Small	127	28	9.3
Medium	29	26	8.7
Micro	1180	266	88.7
Total	1336	300	100.0

Percentages were recalculated using the sample size of 300

supplied manuscript. Percentages and ranks were recalculated from the reported frequencies. Unless otherwise stated, percentages are based on N = 300; for categories with valid-case subtotals in the original table, valid percentages are shown. Chi-square values and P-values are rebuilt as reported because the raw respondent-level dataset was not included.

4. RESULTS AND DISCUSSION

4.1. Socio-demographic Profile of Entrepreneurs

The quantitative profile shows that, out of 300 respondents, 173 were female, representing 57.7%, while 124 were male, representing 41.3%, and 3 preferred not to say. In terms of age,

Table 2: Rebuilt socio-demographic profile of respondents

Variable	Category	Frequency	Recalculated %	Rank
Gender	Male	124	41.3	2
Gender	Female	173	57.7	1
Gender	Prefer not to say	3	1.0	3
Age	20 years and below	2	0.7	5
Age	21-30	97	32.3	1
Age	31-40	91	30.3	2
Age	41-50	59	19.7	3
Age	More than 50	51	17.0	4
Civil status	Single	124	41.3	2
Civil status	Married	161	53.7	1
Civil status	Separated	7	2.3	3
Civil status	Divorced	1	0.3	4
Civil status	Widow	7	2.3	3
Highest educational attainment	No formal education	4	1.3	7
Highest educational attainment	Vocational level	14	4.7	3
Highest educational attainment	High school level	9	3.0	4
Highest educational attainment	High school graduate	59	19.7	2
Highest educational attainment	College graduate	196	65.3	1
Highest educational attainment	Pursuing masteral study	4	1.3	7
Highest educational attainment	Masteral degree holder	2	0.7	8
Highest educational attainment	Other	5	1.7	6
Highest educational attainment	Missing system	7	2.3	5
Type of business entity	Sole proprietorship	204	68.0	1
Type of business entity	One person corporation	15	5.0	4
Type of business entity	Partnership	19	6.3	3
Type of business entity	Corporation	49	16.3	2
Type of business entity	Cooperative	11	3.7	5
Type of business entity	Missing system	2	0.7	6
Business activities	Accommodation and food service	70	23.3	2
Business activities	Administrative and support service	12	4.0	5
Business activities	Agriculture, forestry and fishing	9	3.0	6
Business activities	Arts, entertainment and recreation	3	1.0	9
Business activities	Construction	7	2.3	7
Business activities	Education	1	0.3	10
Business activities	Human health and social work	7	2.3	7
Business activities	Information and communication	3	1.0	9
Business activities	Manufacturing	13	4.3	4
Business activities	Professional, scientific and technical	5	1.7	8
Business activities	Real estate activities	3	1.0	9
Business activities	Transportation and storage	3	1.0	9
Business activities	Wholesale and retail trade; repair of motor vehicles and motorcycles	100	33.3	1
Business activities	Missing system	57	19.0	3
Years of business existence	Below 1 year	65	21.7	1
Years of business existence	1-2 years	47	15.7	4
Years of business existence	3-4 years	59	19.7	2
Years of business existence	5-6 years	26	8.7	5
Years of business existence	7-8 years	20	6.7	6
Years of business existence	Above 8 years	57	19.0	3
Years of business existence	Missing system	26	8.7	5
Gadget used	Smartphones	205	68.3	1
Gadget used	Laptop	62	20.7	3
Gadget used	Personal computer	65	21.7	2
Gadget used	Tablet	15	5.0	4
Gadget used	None	2	0.7	5

Percentages use N=300. Gadget-use frequencies may exceed exclusive ownership assumptions because the source table did not provide a grand valid total for gadget categories

Table 3: Rebuilt business assets and gross monthly business income

Variable	Category	Frequency	Recalculated %	Rank
Micro enterprise assets (valid n=266)	500,000 and below	177	66.5	1
Micro enterprise assets (valid n=266)	750,000-1M	41	15.4	2
Micro enterprise assets (valid n=266)	1M-2M	24	9.0	3
Micro enterprise assets (valid n=266)	2M-3M	24	9.0	3
Small enterprise gross monthly business income (valid n=26)	3M-6M	12	46.2	1
Small enterprise gross monthly business income (valid n=26)	7M-9M	6	23.1	3
Small enterprise gross monthly business income (valid n=26)	10M-12M	1	3.8	4
Small enterprise gross monthly business income (valid n=26)	13M-15M	7	26.9	2
Medium enterprise gross monthly business income (valid n=8)	15M-30M	5	62.5	1
Medium enterprise gross monthly business income (valid n=8)	31M-45M	1	12.5	3
Medium enterprise gross monthly business income (valid n=8)	46M-70M	0	0.0	4
Medium enterprise gross monthly business income (valid n=8)	71M-100M	2	25.0	2
Gross monthly business income (N=300)	50,000 and below	160	53.3	1
Gross monthly business income (N=300)	More than 50,000-250,000	46	15.3	2
Gross monthly business income (N=300)	More than 250,000-500,000	18	6.0	5
Gross monthly business income (N=300)	More than 500,000-750,000	20	6.7	4
Gross monthly business income (N=300)	More than 750,000-1M	16	5.3	6
Gross monthly business income (N=300)	Over 1M	35	11.7	3
Gross monthly business income (N=300)	Missing system	5	1.7	7

Valid denominators follow the subtotals visible in the source table where the manuscript grouped categories by enterprise size

the highest group was 21-30 years old with 97 respondents or 32.3%, followed by 31-40 years old with 91 respondents or 30.3%. Married respondents ranked first with 161 or 53.7%, while single respondents followed with 124 or 41.3%.

Educational attainment was concentrated among college graduates, with 196 respondents or 65.3%. Sole proprietorship ranked first among business entity types with 204 or 68.0%. For business activities, wholesale and retail trade ranked first with 100 respondents or 33.3%, followed by accommodation and food service activities with 70 or 23.3%. In business assets, the micro-enterprise category of PHP 500,000 and below ranked first with 177 or 66.5%. For business existence, below 1 year ranked first with 65 or 21.7%. Smartphones were the most frequently used gadgets, with a frequency of 205 (Tables 2 and 3).

These findings indicate that digital financial services adoption in the study site is occurring largely among micro and small sole proprietors, many of whom are women, younger entrepreneurs, and college-educated business operators. The original discussion links this pattern to the increasing role of female entrepreneurship, youth participation in new business activity, and the contribution of micro firms to local economic development (Carmichael and Mazonde, 2016; Rahman et al., 2020; Sucuahi, 2013).

4.2. Status of Utilization of Digital Financial Services Gateways

GCash ranked first among digital financial services gateways used, with a frequency of 163. ATM ranked second with 83, remittance ranked third with 78, mobile banking ranked fourth with 64, agent ranked fifth with 31, others ranked sixth with 16, and kiosk ranked seventh with 9. The original analysis interprets the preference for GCash as evidence of the wide acceptance of mobile wallet platforms for practical payment transactions. This is consistent with the cited view that mobile wallets provide users with options for online and offline purchases and payments across platforms (Arun Prasad & Arivazhagan, 2021). The use of remittance services among respondents also reflects the broader economic role of digital and formal financial channels in facilitating the movement of funds across households and economic activities (Sutradhar, 2020). (Table 4).

Table 4: Type of digital financial services used

Gateway	Frequency	% of respondents	Recalculated rank
GCash app	163	54.3	1
ATM	83	27.7	2
Mobile banking	64	21.3	4
Remittance	78	26.0	3
Agent	31	10.3	5
Kiosk	9	3.0	7
Others	16	5.3	6

Multiple responses appear possible; percentages use N=300

Table 5: Length of usage of digital financial services gateways

Length of usage	Frequency	Valid % (n=242)	Recalculated rank
<1 year	52	21.5	2
1-3 years	100	41.3	1
3-5 years	36	14.9	3
5-10 years	28	11.6	4
10 years	26	10.7	5

Valid denominator is 242 because reported frequencies sum to 242

The length of usage shows that 1-3 years ranked first with a frequency of 100, followed by less than a year with 52, 3-5 years with 36, 5-10 years with 28, and 10 years with 26. This suggests relatively recent adoption, which the original manuscript connects with the pandemic period when digital media and online transactions increased sharply (Table 5).

For digital features used, money transfer ranked first with 143, receive payment ranked second with 126, bill payment ranked third with 107, purchase ranked fourth with 39, paying online

ranked fifth with 32, view account ranked sixth with 25, credit and QR code both ranked seventh with 21, apply loan ranked eighth with 20, others ranked ninth with 10, and investment ranked tenth with 5. The dominance of money transfer and receiving payment indicates that entrepreneurs use digital financial services mainly for liquidity movement and transaction settlement (Table 6).

For bill payment through digital financial services, internet ranked first with a frequency of 109, prepaid load ranked second with 107, utilities ranked third with 95, government ranked fourth with 88, payment ranked fifth with 86, salaries ranked sixth with 85, car ranked seventh with 37, cable ranked eighth with 33, insurance ranked ninth with 32, loans ranked tenth with 30, retail ranked eleventh with 21, credit ranked twelfth with 18, and others ranked thirteenth with 5. The source discussion emphasizes the internet's centrality in entrepreneurial financial operations and links this finding to the role of internet-enabled commerce and communication (Lazazari, 2018) (Table 7).

Training exposure remains a major weakness. The original table reports that 161 respondents had no digital financial services training, 60 attended 1-2 trainings, 19 attended 3-4 trainings, and 19 attended 4 or more trainings. The analysis therefore supports the need for structured digital financial literacy and digital skills training. This aligns with the literature cited in the manuscript that financial literacy enables informed decisions and effective use of digital platforms (Bire et al., 2019; Demirguc-Kunt et al., 2018) (Table 8).

Table 6: Type of digital features used

Digital feature	Frequency	% of respondents	Recalculated rank
Money transfer	143	47.7	1
Bill payment	107	35.7	3
View account	25	8.3	6
Credit	21	7.0	7
QR code	21	7.0	7
Receive payment	126	42.0	2
Paying online	32	10.7	5
Apply loan	20	6.7	8
Purchase	39	13.0	4
Investment	5	1.7	10
Others	10	3.3	9

Multiple responses appear possible; percentages use N=300. Tied values receive the same dense rank

Table 7: Type of bill payment in digital financial services availed

Bill/payment type	Frequency	% of respondents	Recalculated rank
Prepaid load	107	35.7	2
Utilities	95	31.7	3
Cable	33	11.0	8
Internet	109	36.3	1
Car/transportation	37	12.3	7
Insurance	32	10.7	9
Retail	21	7.0	11
Loans	30	10.0	10
Government	88	29.3	4
Salaries	85	28.3	6
Payment	86	28.7	5
Credit	18	6.0	12
Others	5	1.7	13

Multiple responses appear possible; percentages use N=300

Table 8: Digital financial services training attended

Training attended	Frequency	Valid % (n=259)	Recalculated rank
1-2 trainings	60	23.2	2
3-4 trainings	19	7.3	3
4 or more trainings	19	7.3	3
None	161	62.2	1

Valid denominator is 259 because the reported frequencies sum to 259

Table 9: Dominant frequency in using digital financial services gateways

Payable/ transaction	Highest frequency category	Frequency	Second/ selected comparison category	Frequency
Prepaid load	Weekly	75	Monthly	73
Utilities	Monthly	119	Bi-monthly	4
Cable	Monthly	54	Weekly	1
Internet	Monthly	126	Bi-monthly	1
Car/ transportation	Monthly	38	Annually	4
Insurance	Monthly	29	Annually	10
Loan payment	Monthly	31	Annually	4
BIR remittance	Quarterly	63	Annually	32
SSS	Monthly	88	Quarterly	7
PhilHealth	Monthly	80	Annually	6
Pag-IBIG	Monthly	71	Annually	5
Payment for suppliers	Monthly	68	Weekly	27
Salaries	Monthly	74	Weekly	33

This table rebuilds the core result of the original frequency matrix and preserves the monthly/quarterly dominance reported in the manuscript

Table 10: Rebuilt dominant mode of payment for digital financial service gateways availed

Payable	Highest mode of payment	Frequency	Next highest/ selected digital mode	Frequency
Prepaid load	Direct cash	89	E-wallet	67
Utilities	Direct cash	232	Cash on delivery	8
Cable	Direct cash	60	E-wallet	5
Internet	Direct cash	125	E-wallet	20
Transportation	Direct cash	50	Mobile	14
Insurance	Direct cash	36	Mobile	9
Loan payments	Direct cash	35	Internet	13
BIR	Direct cash	202	Internet	13
SSS	Direct cash	115	Internet	11
PhilHealth	Direct cash	106	Internet	12
Pag-IBIG	Direct cash	85	Internet	10
Payment for suppliers	Direct cash	109	Mobile	21
Salaries	Direct cash	155	ATM	18
Credit cards	Direct cash	4	Internet	3

This rebuilt table summarizes the original large Table 8. Direct cash ranked first across all payables shown

In terms of frequency of use, the original data indicate that several payables are handled monthly, including prepaid load (73), utilities (119), cable (54), internet (126), car/transportation (38), insurance (29), loan payment (31), SSS (88), PhilHealth (80), Pag-IBIG (71), payment for suppliers (68), and salaries (74). BIR remittance was highest on a quarterly basis. These findings indicate that digital financial services are used for recurring financial obligations and routine business transactions (Table 9).

4.3. Mode of Payment and Internet Service Provider

Direct cash remained the dominant mode of payment across multiple categories. In the original Table 8, direct cash ranked first for prepaid load (89), utilities (232), cable (60), internet (125), transportation (50), insurance (36), loan payments (35), BIR (202), SSS (115), PhilHealth (106), Pag-IBIG (85), payment for suppliers (109), salaries (155), and credit cards (4). The original discussion interprets this as evidence that cash remains widely adopted and trusted despite the emergence of digital options. It further notes that online payment and kiosk payment were often among the least used modes, indicating opportunities for future innovation, training, and promotion (Table 10).

For internet service provider subscribed, TETCO ranked first with 123, Data Connection ranked second with 68, PLDT ranked third with 46, Globe Home WiFi ranked fourth with 20, Globe/SmartBro ranked fifth with 6, and others ranked sixth with 4. The source manuscript interprets the high frequency for TETCO as evidence that local internet service providers remain important for entrepreneurs in the area (Table 11).

Table 11: Type of internet service provider subscribed

Provider	Frequency	Valid % (n=267)	Recalculated rank
TETCO	123	46.1	1
PLDT	46	17.2	3
Globe Home WiFi	20	7.5	4
Data Connection	68	25.5	2
Globe/SmartBro	6	2.2	5
Others	4	1.5	6

Valid denominator is 267 because the reported frequencies sum to 267

Table 12: Perception on the measure of implementation of digital financial services

Dimension	Item	Mode	Interpretation
Structure assurance	1	4	High
Structure assurance	2	4	High
Structure assurance	3	4	High
Information quality	4	4	High
Information quality	5	4	High
Information quality	6	4	High
Actual ease of usage	7	4	High
Actual ease of usage	8	4	High
Actual ease of usage	9	4	High
Trust	10	3	Moderate
Trust	11	3	Moderate
Trust	12	4	High
Contentment	13	4	High
Contentment	14	4	High
Contentment	15	4	High
Government support	16	4	High
Government support	17	3	Moderate
Government support	18	4	High
Overall mode		4	High

The overall mode remains 4 (High), consistent with the source manuscript

4.4. Perceived Implementation, Reasons, Challenges, and Support

The perception on the measure of implementation of digital financial services was generally high, with an overall mode of 4. Structure assurance, information quality, actual ease of usage, contentment, and several items under government support were interpreted as high, while some trust and government support items

Table 13: Reasons for respondents' use of digital financial services

Dimension	Item	Mode	Interpretation
Convenience	1	3	Agree
Convenience	2	3	Agree
Convenience	3	3	Agree
Convenience	4	3	Agree
Convenience	5	4	Strongly Agree
Accessibility	1	3	Agree
Accessibility	2	3	Agree
Accessibility	3	3	Agree
Accessibility	4	3	Agree
Accessibility	5	3	Agree
Financial economic growth	1	3	Agree
Financial economic growth	2	3	Agree
Financial economic growth	3	3	Agree
Financial economic growth	4	3	Agree
Financial economic growth	5	3	Agree
MSME growth	1	3	Agree
MSME growth	2	3	Agree
MSME growth	3	3	Agree
MSME growth	4	3	Agree
MSME growth	5	3	Agree
Overall mode		3	Agree

The overall mode is 3 (Agree)

Table 14: Challenges encountered by respondents in the use of digital financial services

Challenge	Mode	Interpretation
Using digital services might be risky	3	Agree
Issues with consistency and safety	3	Agree
Ineffective/insufficient authentication process	3	Agree
Lack of digital financial literacy	4	Strongly Agree
Less information available on benefits	3	Agree
Concerns about technology and networking	3	Agree
Agents and mobile network operators are not properly trained	3	Agree
Concerns of law and regulation	3	Agree
Inability to adapt to new technologies	3	Agree
Internet is not available everywhere	4	Strongly Agree
Inaccessibility to the masses of consumers	3	Agree
A lack of faith	4	Strongly Agree
Lack of money	4	Strongly Agree
Phishing	4	Strongly Agree
Pharming	4	Strongly Agree
SIM card swap	4	Strongly Agree
Spyware	4	Strongly Agree
Hacking	3	Agree
Overall mode	3	Agree

The overall mode is 3 (Agree); selected risk and infrastructure items reached Strongly Agree

were interpreted as moderate. The original discussion states that respondents felt safe doing financial transactions through digital financial services because of technical assurance procedures, while qualitative responses still reflected trust issues due to scams and digital fraud (Table 12).

The reasons for the respondents' use of digital financial services obtained an overall mode of 3, interpreted as agree. The dimensions covered convenience, accessibility, financial economic growth, and MSME growth. This indicates that entrepreneurs generally recognize digital financial services as useful for financial inclusion, effectiveness, and ease of business transactions (Table 13).

Challenges encountered obtained an overall mode of 3, interpreted as agree. However, selected challenge items were interpreted as strongly agree in the original table, including lack of digital financial literacy, internet not available everywhere, lack of faith, lack of money, phishing, pharming, SIM card swap, spyware, and hacking. This confirms that adoption is affected not merely by willingness to use platforms but also by infrastructure, literacy, trust, affordability, and cybersecurity vulnerabilities (Table 14).

Table 15: Suggestions to support entrepreneurs' digital financial services gateways

Suggestion	Mode	Interpretation
Provision of technical support and trainings on digital financial services gateways usage	4	Strongly Agree
IT assistance and legal defense for entrepreneurs	4	Strongly Agree
Increase data and internet reach/connection	4	Strongly Agree
Allowing international internet provider to enter the market	4	Strongly Agree
Cheaper internet prices	4	Strongly Agree
Boost infrastructure for electricity	4	Strongly Agree
Overall mode	4	Strongly Agree

The overall mode is 4 (Strongly Agree)

Suggestions to support entrepreneurs' digital financial services gateways obtained a mode of 4, interpreted as strongly agree. This indicates strong support for interventions such as digital financial literacy training, technical support, data privacy strengthening, improved connectivity, more affordable internet access, and better digital infrastructure (Table 15).

4.5. Correlation and Difference Results Retained from the Original Analysis

The original analysis reports no significant relationship between socio-demographic variables and perception of the measure of implementation of digital financial services for gender, age, civil status, type of business entity, type of business activities, and gross monthly income because their $P > 0.05$. Educational attainment, however, showed a significant relationship with perception of implementation, with a $P = 0.031$ (Table 16).

For socio-demographic profile and reasons for use, the rebuilt inferential table shows that age had a $P = 0.015$, which was <0.05 level of significance; therefore, the null hypothesis was rejected and age was significantly associated with the reasons for using digital financial services. Gender had a $P = 0.911$, civil status had a $P = 0.890$, and educational attainment had a $P = 0.333$; these values were <0.05, indicating no significant correlation for those variables. The original narrative appeared to transpose the P-value discussion for age and gender; this draft follows the values visible in the rebuilt source table (Table 17).

No socio-demographic variable was significantly correlated with challenges encountered, as all P-values exceeded 0.05 (Table 18).

For the status of utilization of digital technology and perception of implementation, length of usage had a $P = 0.013$, which was <0.05; therefore, the original analysis rejected the null hypothesis and indicated a significant relationship. For the perception on the measure of implementation and reasons of utilization, the

Table 16: Socio-demographic profile and perception on implementation

Demographic profile	Chi-square value	P-value	Decision	Conclusion
Gender	5.33	0.722	Failed to Reject H_0	No significant correlation
Age	12.003	0.744	Failed to Reject H_0	No significant correlation
Civil status	11.654	0.767	Failed to Reject H_0	No significant correlation
Educational attainment	26.227	0.031	Reject H_0	Significant correlation
Type of business entity	17.894	0.33	Failed to Reject H_0	No significant correlation
Type of business activities	42.032	0.837	Failed to Reject H_0	No significant correlation
Gross monthly income	16.682	0.862	Failed to Reject H_0	No significant correlation
Years of existence	31.492	0.049	Reject H_0	Significant correlation

Inferential values are rebuilt as reported; raw cross-tabulations were not available for recomputation

Table 17: Socio-demographic profile and reasons for using digital financial services

Demographic profile	Chi-square value	P-value	Decision	Conclusion
Gender	2.091	0.911	Failed to Reject H_0	No significant correlation
Age	19.208	0.015	Reject H_0	Significant correlation
Civil status	6.472	0.89	Failed to Reject H_0	No significant correlation
Educational attainment	23.204	0.333	Failed to Reject H_0	No significant correlation
Type of business entity	8.13	0.775	Failed to Reject H_0	No significant correlation
Type of business activities	28.97	0.88	Failed to Reject H_0	No significant correlation
Gross monthly income	14.96	0.665	Failed to Reject H_0	No significant correlation
Years of existence	19.691	0.184	Failed to Reject H_0	No significant correlation

The original narrative appears to transpose the *P* value discussion for age and gender; this rebuilt table follows the values visible in the source table.

Table 18: Socio-demographic profile and challenges encountered

Demographic profile	Chi-square value	P-value	Decision	Conclusion
Gender	1.471	0.961	Failed to Reject H_0	No significant correlation
Age	17.234	0.141	Failed to Reject H_0	No significant correlation
Civil status	11.0303	0.526	Failed to Reject H_0	No significant correlation
Educational attainment	22.456	0.374	Failed to Reject H_0	No significant correlation
Type of business entity	13.858	0.31	Failed to Reject H_0	No significant correlation
Type of business activities	29.82	0.855	Failed to Reject H_0	No significant correlation
Gross monthly income	15.636	0.618	Failed to Reject H_0	No significant correlation
Years of existence	9.965	0.822	Failed to Reject H_0	No significant correlation

Inferential values are rebuilt as reported

Table 19: Status of utilization and perception on implementation

Utilization of digital technology	Chi-square value	P-value	Decision	Conclusion
Length of usage	31.213	0.013	Reject H_0	Significant correlation
Digital financial training attended	26.462	0.048	Reject H_0	Significant correlation

Inferential values are rebuilt as reported

Table 20: Implementation rating and reasons for use between groups of respondents

Variable	Chi-square value	P-value	Decision	Conclusion
Reasons for respondents' use	355.43	0.0	Reject H_0	Significant correlation

Inferential value is rebuilt as reported

original analysis reports a P = 0.00, which was <0.05; therefore, the null hypothesis was rejected. These inferential findings were retained exactly as reported in the source manuscript and were not recalculated (Tables 19 and Table 20).

4.6. In-depth Analysis, Interpretation, and Implications of Findings

The following analysis expands the quantitative findings in journal-article form. It interprets the rebuilt and recalculated tables in relation to the original manuscript, which positions digital financial services as a pathway for entrepreneurship, financial inclusion, and competitiveness in support of the Philippine Creative Industries Development Plan (Department of Trade and Industry [DTI], 2024). The interpretation also retains the manuscript's literature anchors on digital financial inclusion, digital transactions, fintech adoption, trust, infrastructure, and financial literacy.

4.7. Socio-demographic Profile of Respondents

The profile of the respondents indicates that entrepreneurship in Tandag City is strongly represented by women, younger adults, married individuals, college graduates, and sole proprietors. Female respondents constituted the larger group, with 173 or 57.7%, while males accounted for 124 or 41.3%. From a development perspective, this result is meaningful because women-led and women-managed enterprises often connect household financial management, livelihood sustainability, and microenterprise growth. The use of digital financial services may further support business operations and performance among female entrepreneurs (Malaquias & Malaquias, 2022). The finding is consistent with the manuscript's discussion that female entrepreneurship contributes to economic participation, expression, agency, and empowerment (Mazonde & Carmichael, 2016).

In terms of age, the largest group was 21-30 years old, with 97 respondents or 32.3%, followed by those aged 31-40, with 91 or 30.3%. The majority of respondents therefore belong to early and middle productive age groups. This suggests that the local entrepreneurial sector has a relatively young demographic base that may be receptive to mobile applications, internet-based payments, e-wallet transactions, and other forms of digital finance. However, age-related digital exposure should not be equated with full digital financial competence. Even younger entrepreneurs may still require training on fraud detection, authentication, account protection, data privacy, and transaction documentation. This is consistent with the manuscript's view that youthful entrepreneurs may be more inclined toward business innovation but still require enabling support to use digital systems productively (Azoulay et al., 2018).

Civil status data show that married respondents formed the highest group, with 161 or 53.7%. This implies that many entrepreneurs are likely managing both business and household financial obligations. Digital financial services may therefore serve a dual function: business operations and household financial management. In a local MSME context where family and business finances often overlap, fintech education should include budgeting, transaction recording, separation of personal and business accounts, and responsible use of digital payment channels.

Educational attainment is also significant. College graduates constituted 196 respondents or 65.3%, indicating that most respondents had formal educational preparation. However, the later finding that lack of digital financial literacy was rated Strongly Agree as a challenge shows that general education does not automatically produce specialized fintech capability. This distinction is important for journal development: formal schooling and digital financial literacy should be treated as related but analytically separate constructs. Financial literacy in digital environments includes knowledge of authentication, data privacy, phishing risks, e-wallet limits, service fees, transaction documentation, complaint mechanisms, and consumer protection.

The interpretation is consistent with Demirguc-Kunt et al. (2018), who emphasized that financial literacy is necessary for informed financial decisions and meaningful participation in digital financial platforms.

4.8. Business Profile, Assets, and Income

The business entity profile shows that sole proprietorship dominated the sample, with 204 respondents or 68.0%. This confirms that digital financial services adoption in the study site is occurring largely within owner-managed businesses. Sole proprietors usually make financial decisions personally and often handle payments, supplier transactions, customer collections, and cash-flow monitoring without specialized finance staff. This structure can accelerate digital adoption because the owner can decide immediately; however, it can also increase exposure to transaction errors, weak documentation, and cyber-risk. For this reason, fintech capability-building should be designed for owner-managers and should use practical, transaction-based training rather than highly technical banking language.

Business activities were led by wholesale and retail trade, including repair of motor vehicles and motorcycles, with 100 respondents or 33.3%, followed by accommodation and food service activities with 70 or 23.3%. These are high-frequency, customer-facing sectors. They directly benefit from fast customer payments, QR codes, e-wallet transfers, digital receipts, and supplier payment channels. The result implies that digital financial services are not peripheral tools for the respondents; they are operationally relevant to sales, procurement, customer convenience, and working capital circulation. This supports the argument that entrepreneurs must adjust to consumer adoption of e-payments in a borderless era where goods and services can be bought and sold anytime and anywhere (Sanrach, 2021).

The business asset profile confirms the predominance of microenterprises. Among microenterprise respondents, 177 or 66.5% had assets of 500,000 and below. Gross monthly income also showed that 160 respondents or 53.3% earned 50,000 and below. The implication is that digital financial services can improve efficiency, but adoption programs must be low-cost, practical, and appropriate to microenterprise capacity. Digital micro-financial services can also provide SMEs with greater opportunities for financial access and inclusion (Rasheed et al., 2019). These data indicate that most entrepreneurs operate with modest capital, limited liquidity, and likely sensitivity to transaction costs, data expenses, device quality, and service charges. The implication is that digital financial services can improve efficiency, but adoption programs must be low-cost, practical, and appropriate to microenterprise capacity. This supports the broader view that digital financial services can contribute to inclusive prosperity when they are affordable, accessible, and supported by adequate infrastructure (Honohan, 2004, as cited by Lai et al., 2020; Llanto et al., 2018).

4.9. Utilization of Digital Financial Services Gateways

GCash emerged as the most commonly used digital financial services gateway, with 163 respondents or 54.3%. ATM ranked second with 83 or 27.7%, remittance ranked third with 78 or 26.0%, and mobile banking ranked fourth with 64 or 21.3%. Entrepreneurs use digital channels to move money, receive customer payments, and settle obligations. This pattern highlights the importance of information-system performance and user behavior in the continued use of mobile payment services (Pelegrin, 2021). This may be attributed to familiarity, ease of registration, suitability for small-value transactions, and everyday consumer use (Budiarti et al., 2021; Arun Prasad and Arivazhagan, 2021). The lower use of mobile banking compared with GCash indicates that entrepreneurs may prefer app-based wallets over formal bank-linked digital platforms, reflecting the continuing development of innovative digital banking products and services (Haralayya, 2021).

The lower use of mobile banking compared with GCash indicates that entrepreneurs may prefer app-based wallets over formal bank-linked digital platforms. This has two implications. First, e-wallets may be perceived as easier, faster, and more compatible with microtransactions. Second, formal digital banking may still be less accessible or less aligned with the operating realities of micro and small entrepreneurs. Thus, the finding points to partial digital financial inclusion: entrepreneurs are digitally transacting, but they may not yet be fully integrated into broader digital financial systems such as formal savings, credit, insurance, and investment channels.

Length of usage indicates that many entrepreneurs are relatively new users. The largest valid group had used digital financial services for 1-3 years, with 100 respondents or 41.3%, followed by <1 year with 52 or 21.5%. This suggests adoption accelerated during the pandemic and post-pandemic period, when mobility restrictions and changing consumer behavior increased reliance on digital platforms. The manuscript associates this pattern with the COVID-19 period, when digital media use increased substantially in everyday life and institutional activity (Ricarte, 2020). The implication is that usage may still be at a consolidation stage: entrepreneurs can perform basic transactions but may not yet have mature digital financial habits.

4.10. Digital Features and Bill Payment Behavior

Money transfer was the most commonly used feature, with 143 respondents or 47.7%, followed by receive payment with 126 or 42.0% and bill payment with 107 or 35.7%. These results show that digital financial services are used mainly for transactional liquidity, particularly through digital payment and money-transfer functions (Budiarti et al., 2021). However, investment was the least used feature, with only 5 respondents or 1.7%, while applying for loans was reported by only 20 or 6.7%. This indicates that the respondents use digital financial services primarily as payment channels rather than as comprehensive tools for financing, savings, credit access, investment, and business expansion.

The implication is that digital financial education should move beyond sending and receiving money. Entrepreneurs should be trained on digital savings, responsible digital credit, documentation of transaction histories, use of payment records for creditworthiness, and basic investment literacy. The manuscript cites evidence that digital financial services can reduce transaction and administrative costs, increase speed and security, and enhance

visibility of economic activity, which can facilitate access to credit and inclusion in formal economies (Aker et al., 2014; BTCA, 2015; Cook and McKay, 2015; Wright et al., 2017). The findings show that this potential has not yet been fully converted into broader financial capability among the respondents.

For bill payment, internet ranked first with 109 respondents or 36.3%, followed by prepaid load with 107 or 35.7% and utilities with 95 or 31.7%. This pattern confirms that digital financial services are used for recurring operational and household obligations. The high ranking of internet payment is especially important because connectivity is both a bill to be paid and a prerequisite for digital financial service use. Entrepreneurs cannot sustain digital transactions without reliable and affordable internet. The finding supports Lazzari (2018) assertion that the internet has transformed commerce and business activity through instant communication and access.

4.11. Training, Frequency of Use, and Payment Mode

Digital financial services training is one of the clearest weaknesses in the findings. Among valid responses, 161 or 62.2% had not attended any digital financial services training. Only 60 or 23.2% had attended 1-2 trainings, while 19 or 7.3% attended 3-4 trainings and another 19 or 7.3% attended 4 or more trainings. This finding explains why entrepreneurs may be users of digital platforms but remain vulnerable to scams, poor authentication practices, weak documentation, and low confidence. Financial literacy and financial behavior are important considerations in the effective use of financial services (Dewi et al., 2020; Demirguc-Kunt et al., 2018; Awinja & Fatoki, 2021; Bire et al., 2019). It supports Demirgüç-Kunt et al., (2018), who emphasized the role of financial literacy in effective participation in digital platforms, and it is consistent with Awinja and Fatoki (2021) and Bire et al. (2019), who recommended training programs to support SME digitization and financial inclusion.

Frequency data show that several payables are handled monthly through digital financial services, including utilities, cable, internet, transportation, insurance, loan payment, SSS, PhilHealth, Pag-IBIG, supplier payments, and salaries, while BIR remittance is highest on a quarterly basis. This suggests that digital financial services are already part of routine financial cycles. They are not merely emergency tools; they are integrated into recurring compliance, supplier, payroll, and household-related transactions. Consequently, disruptions in internet access, platform reliability, or account security can affect business continuity.

Despite this use, direct cash remained the highest mode of payment across all payables in the rebuilt table. Direct cash ranked first for prepaid load, utilities, cable, internet, transportation, insurance, loan payments, BIR, SSS, PhilHealth, Pag-IBIG, supplier payments, salaries, and credit cards. This indicates hybrid payment behavior. Entrepreneurs may use digital financial services, yet cash remains dominant because of habit, perceived safety, immediate confirmation, limited internet reliability, service fees, or distrust of digital systems. This finding is consistent with Świecka et al. (2021), who observed that traditional payment modes, particularly cash, continue to hold a dominant position despite the emergence of innovative payment forms.

4.12. Perceived Implementation of Digital Financial Services

The overall mode for perception on the implementation of digital financial services was 4, interpreted as High. Structure assurance, information quality, actual ease of usage, contentment, and most government support items were rated high. This means that respondents generally perceive digital financial services as functional, useful, and acceptable. However, two trust items were rated Moderate, and one government support item was also rated Moderate. The pattern indicates that usability and satisfaction are relatively strong, but trust and institutional support require further strengthening, consistent with the importance of perceived value in the adoption and continued use of mobile financial services (Karjaluoto et al., 2019).

This result is consistent with the extended Technology Acceptance Model, which emphasizes perceived usefulness, perceived ease of use, perceived risk, cost, government support, and trust as determinants of digital financial service adoption (Das and Das, 2020). The interpretation is that entrepreneurs are not rejecting digital financial services; instead, they are adopting them cautiously. They recognize convenience and usefulness but remain attentive to fraud, safety, and support concerns. Therefore, platform improvement must be accompanied by consumer protection, help-desk access, transaction dispute mechanisms, fraud reporting, and localized training.

4.13. Reasons for Use, Challenges, and Support Needed

The reasons for using digital financial services obtained an overall mode of 3, interpreted as Agree. Respondents agreed that convenience, accessibility, financial economic growth, and MSME growth explain their use of digital financial services. This indicates that entrepreneurs recognize the practical value of digital transactions. The finding supports Klapper and Singer (2014), who noted that digital financial services allow business owners to interact with banks, employees, suppliers, and markets more easily and economically. It also aligns with the manuscript's discussion that digital transactions can reduce costs, increase speed, and support visibility of economic activity.

Challenges encountered obtained an overall mode of 3, interpreted as Agree. However, several critical items reached Strongly Agree: Lack of digital financial literacy, internet not available everywhere, lack of faith, lack of money, phishing, pharming, SIM card swap, and spyware. These results show that the major barriers are educational, infrastructural, financial, and security-related, particularly where ICT infrastructure and connectivity are insufficient (Kaponda & Tembo, 2018). The strong concern over phishing, pharming, SIM-swap, spyware, and lack of trust confirms that entrepreneurs are exposed to cyber-risk and may not yet have sufficient protective knowledge. This is consistent with Traynor et al. (2017), who noted that security and privacy can be overlooked in rapid digital solution deployment, and with Kandpal and Mehrotra (2019), who emphasized the need for control mechanisms in response to cyber-fraud. Rashid (2020) likewise identified IT infrastructure challenges, regulatory limits, and digital illiteracy as barriers to full use of digital financial services.

Respondents strongly agreed with all suggested support mechanisms, including technical support and training, IT assistance and legal defense, wider data and internet connection, entry of international internet providers, cheaper internet prices, and improved electricity infrastructure (Bagdadee & Zhang, 2019; Kaponda & Tembo, 2018). This shows that entrepreneurs are asking for an enabling ecosystem, not merely an app-based solution. The implication is that SUCs, LGUs, financial institutions, DICT, DTI, telecommunications providers, and consumer protection agencies must work together. Training is necessary but insufficient if internet, electricity, affordability, legal support, and cybersecurity protection remain weak.

4.14. Inferential Results and Research Implications

The inferential results show that educational attainment had a significant correlation with perception on implementation, with a $P = 0.031$, and years of business existence was also significant, with a $P = 0.049$. This means that perception of digital financial service implementation is shaped more by knowledge background and business experience than by gender, age, civil status, business type, or income category. Educational exposure and accumulated business experience may improve the ability of entrepreneurs to evaluate reliability, usefulness, trustworthiness, and support systems.

Age was significantly correlated with reasons for using digital financial services, with a $P = 0.015$. This suggests that motivations for using digital financial services differ across age groups. Younger entrepreneurs may be motivated by convenience, familiarity, and speed, while older entrepreneurs may be motivated by necessity, customer demand, or external pressure. Program design should therefore avoid a uniform approach. Younger users may benefit from advanced modules on QR payments, online customer transactions, and digital records, while older entrepreneurs may need step-by-step assisted onboarding and fraud-prevention coaching.

No socio-demographic variable showed a significant correlation with challenges encountered. This indicates that difficulties in using digital financial services are broadly experienced across respondent groups. Internet instability, cyber-risk, weak trust, training gaps, and affordability concerns appear to be systemic rather than confined to one demographic profile. This finding strengthens the argument for ecosystem-wide interventions rather than narrow group-specific solutions.

Length of usage was significantly correlated with perception on implementation, with a $P = 0.013$, and digital financial training attended was also significant, with a $P = 0.048$. This is a strong programmatic finding. It indicates that experience and training matter. Entrepreneurs who have used digital financial services longer and those who have attended training are more likely to differ in their perception of implementation. The policy implication is direct: training can shape confidence, awareness, and evaluation of digital financial services. The result supports the need for SUC-led extension programs in digital financial literacy, fintech use, digital bookkeeping, and cybersecurity.

4.15. Overall Editorial Interpretation

Taken together, the findings show that digital financial services among entrepreneurs in Tandag City are already present but not yet fully matured. Respondents use e-wallets, money transfers, payment receipt functions, digital bill payment, and recurring digital transactions. However, the continued dominance of direct cash payments, the large number of respondents without digital financial services training, the moderate trust ratings, and the strong agreement on cyber-risk and infrastructure barriers indicate partial adoption rather than full digital transformation.

The study contributes to the literature by showing that digital financial service adoption in a local Philippine entrepreneurial context is not merely a matter of application availability. It is part of a broader digital transformation in which enterprises increasingly rely on digital technologies to improve competitiveness, resilience, and sustainability (Binaluyo et al., 2024; World Economic Forum, 2023). It is shaped by education, business experience, age-related motivation, training exposure, trust, cybersecurity awareness, internet infrastructure, electricity reliability, and affordability. This supports the Philippine Creative Industries Development Plan's emphasis on digital technology integration, digital skills, data accessibility, and infrastructure development (DTI, 2024). It also corresponds with the broader argument that digital financial inclusion can support financial stability, inclusive prosperity, and economic growth when it is properly implemented and supported (Sumaylo et al., 2022; Honohan, 2004, as cited by Lai et al., 2020).

4.16. Program and Policy Implications

First, SUCs should institutionalize digital financial literacy as part of extension and entrepreneurship development. The high proportion of entrepreneurs without training and the strong agreement on lack of digital financial literacy justify a structured capability-building program for MSMEs. This program should include e-wallet use, mobile banking, secure passwords, two-factor authentication, phishing detection, SIM-swap prevention, digital receipts, recordkeeping, and complaint procedures.

Second, LGUs and national agencies should treat internet connectivity and electricity reliability as MSME competitiveness issues. Digital financial service adoption depends on stable power, affordable internet, and broad network access. Infrastructure support is therefore part of enterprise development, not merely a telecommunications concern.

Third, financial institutions and fintech providers should strengthen trust-building mechanisms. Moderate trust ratings and strong cyber-risk concerns require visible safeguards, simplified user education, accessible customer support, transaction verification, fraud reporting channels, and dispute-resolution assistance.

Fourth, entrepreneurship programs should move beyond basic e-wallet familiarization. Since money transfer and receipt of payment dominate while investment and loan application functions remain low, entrepreneurs should be trained on broader financial technology applications that can support savings, responsible credit access, business expansion, and financial resilience.

Finally, interventions should be ecosystem-based. Because challenges were not significantly associated with a specific socio-demographic group, barriers appear to affect entrepreneurs broadly. Digital financial inclusion therefore requires coordinated action across education, infrastructure, regulation, platform design, consumer protection, and local enterprise development.

5. QUALITATIVE RESULTS

The qualitative component was analyzed thematically from the interview and focus group discussion responses reported in the source manuscript. The available qualitative evidence consisted of summarized participant responses rather than full transcript excerpts. The verbatim responses below are therefore taken from the response entries listed in the manuscript.

5.1. Themes and Sub-themes Matrix

Research question	Major theme	Sub-themes
Reasons for using digital financial services gateways	Transactional convenience and accessibility	Speed, time-saving, less hassle, easier access
Constraints in using digital financial services	Infrastructure, literacy, and trust barriers	Poor/no internet, limited knowledge, app glitches, distrust due to scams
Suggestions for government intervention and institutional support	Institutional support for digital inclusion and protection	Digital financial literacy, free/affordable internet, improved security features, more providers, infrastructure support

5.1.1. Theme 1: Transactional convenience and accessibility

The first theme explains why entrepreneurs use digital financial services gateways in their business operations. Participants associated these platforms with speed, convenience, and accessibility. Their responses included *fast service* (*save time*) *to transact business* (*Participant 3*), *convenience* (*less hustle*) (*Participant 7*), and *accessibility* (*easier to use*) (*Participant 11*). These responses support the quantitative result showing that GCash ranked first among digital financial services gateways and money transfer ranked first among digital features used. The theme indicates that entrepreneurs value platforms that reduce waiting time, physical travel, and transaction complexity.

From an editorial and research perspective, this theme is central because it explains the practical adoption logic of MSMEs. Entrepreneurs do not adopt digital financial services merely because these are technologically available; they adopt them when these platforms solve everyday operational problems. The finding also reinforces the literature on perceived usefulness and perceived ease of use as drivers of fintech adoption (Das and Das, 2020; Ismael et al., 2021).

5.1.2. Theme 2: Infrastructure, literacy, and trust barriers

The second theme captures the constraints encountered by entrepreneurs. Participants identified *poor internet connection*, *absence or no internet connection* (*Participant 20*), *lack of knowledge to use digital financial services gateways* (*literacy*) (*Participant 15*), *interruptions due to app glitches*, and *lack of trust due to scammers while using digital financial services* (*Participant 10*). These barriers align with the quantitative findings showing that selected challenge items were strongly agreed upon, including lack of digital financial literacy, lack of faith, phishing, pharming, SIM card swap, spyware, and hacking.

This theme shows that the digital finance problem is not simply a technology adoption issue. It is also an infrastructure, education, and consumer-protection issue. Poor connectivity prevents reliable access; low literacy limits confident use; app glitches create transaction anxiety; and scam experiences or fear of fraud weaken trust. These findings are consistent with literature cited in the manuscript on digital illiteracy, IT infrastructure limitations, cyber-fraud, and trust as barriers to digital financial inclusion (Kandpal and Mehrotra, 2019; Rashid, 2020; Sun et al., 2017).

5.1.3. Theme 3: Institutional support for digital inclusion and protection

The third theme concerns the support expected by entrepreneurs. Participants suggested *For the government to training as to the use of digital financial services* (*conduct digital financial literacy*) (*Participant 1*); *For the government to provide free internet access to all to use it anytime and anywhere*; (*Participant 5*) *To improve the special features: security features, less restrictions*(*Participant 8*)*; and incorporate new trends*; *to allow international internet providers to operate to increase competition* (*Participant 17*); *to lower the internet subscription prices by increasing the internet supply and to increase signal through installed cellsites infrastructure with full support of electric supply* (*Participant 14*). These responses mirror the quantitative result that suggestions to support entrepreneurs obtained a mode of 4, interpreted as strongly agree.

The theme indicates that participants expect government and institutional intervention to address both capability and access. Digital financial literacy training is necessary but insufficient if connectivity remains poor, internet subscriptions remain costly, electricity is unstable, and cybersecurity features remain weak. As a State University and College, NEMSU can respond through research-based extension services, training modules, digital literacy clinics, LGU partnerships, and monitoring of MSME digital adoption outcomes.

5.2. Integrated Discussion

The quantitative and qualitative findings converge on a clear pattern: entrepreneurs recognize the usefulness of digital financial services, but adoption remains constrained by cash preference, limited training, connectivity gaps, and trust concerns. The high use of GCash and money transfer features demonstrates practical adoption, while the dominance of direct cash payment across many categories shows that digital transformation is incomplete. This mixed pattern is typical of transitional digital economies where users combine traditional and digital modes depending on trust, convenience, infrastructure reliability, and transaction type.

The finding that 161 respondents had no digital financial services training is particularly important for policy and extension programming. Even where entrepreneurs own smartphones and

use mobile wallets, the absence of training increases vulnerability to fraud, errors, weak record-keeping, and underutilization of more advanced financial features. The study therefore points to the need for practical, localized, and sector-specific digital financial education rather than generic fintech advocacy.

The significant relationship between educational attainment and perceived implementation suggests that education may influence how entrepreneurs understand, evaluate, and trust digital financial systems. The significant relationship between length of usage and perception of implementation also indicates that familiarity may improve confidence. These findings support phased interventions where initial training focuses on basic usage, while continuing programs develop more advanced skills in digital payments, digital bookkeeping, fraud prevention, dispute resolution, and online customer transactions.

6. CONCLUSION AND RECOMMENDATIONS

The study concludes that digital financial services gateways are already present in the business practices of entrepreneurs in Tandag City, especially through GCash, money transfers, receiving payments, and bill payments. However, the use of digital financial services exists alongside a continued preference for direct cash payments. This indicates that digital adoption is emerging but not yet fully institutionalized across business transactions.

The profile of respondents shows that many users are female, younger, college-educated, and operating sole proprietorships, mainly in wholesale and retail trade. These characteristics suggest a strong opportunity for targeted digital financial education because the respondents already possess basic educational preparation, business exposure, and smartphone access.

The qualitative findings confirm that entrepreneurs use digital financial services because they are fast, convenient, and accessible. However, poor internet connection, absence of connectivity, lack of knowledge, app glitches, and lack of trust due to scammers remain major barriers. Therefore, digital financial inclusion for MSMEs requires not only platform availability but also training, infrastructure, affordability, and cybersecurity support.

6.1. Recommendations

First, NEMSU, through its business, information technology, extension, and research units, should design and implement a digital financial literacy extension program for MSMEs in Tandag City. The program should cover mobile wallet use, mobile banking, bill payment, QR transactions, online payment records, scam detection, phishing prevention, data privacy, and complaint-handling mechanisms.

Second, the LGU, DTI, DICT, financial institutions, and internet service providers should collaborate on localized digital finance support systems. These may include barangay-level orientation sessions, help desks during business permit renewal periods, onboarding assistance for digital payments, and information materials using Filipino, Cebuano, and local language explanations.

Third, infrastructure support should be treated as part of MSME competitiveness policy. Connectivity, electricity reliability, affordable internet subscriptions, and broader provider competition are necessary conditions for sustained use of digital financial services. Without infrastructure support, digital financial literacy training will have limited effect.

Fourth, financial institutions and digital wallet providers should improve user protection mechanisms and simplify security education for small entrepreneurs. Trust-building should include clearer transaction records, faster response to failed transactions, stronger authentication support, and visible fraud reporting channels.

6.2. Policy Implications

The findings imply that digital financial services should be integrated into local MSME development policy, SUC extension programming, and creative industry competitiveness planning. For LGUs, support should include budget allocation for internet access points, digital entrepreneurship training, and public-private partnerships with financial institutions and service providers. For SUCs, the study supports the development of research-based extension programs and curriculum enhancement in entrepreneurship, financial technology, digital business, and consumer protection.

At the institutional level, NEMSU can position itself as a regional knowledge and training hub for MSME digital financial capability. This role aligns with the mandate of SUCs to support instruction, research, extension, and production, while also responding to the Philippine Creative Industries Development Plan and local competitiveness needs.

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