THE IMPACT OF PROJECT MANAGEMENT STRATEGIES ON THE EFFECTIVENESS OF DIGITAL MARKETING ANALYTICS FOR START-UP GROWTH IN THE UNITED STATES

Rifat E Kaniz [1], Abdur Rahman Lindon [2], Md Atiqur Rahman [3], Md. Asif Hasan [4], Amjad Hossain [5]

Affiliations:

[1] Washington University of Science and Technology, USA
[1] rkaniz.student@wust.edu

[2] Oklahoma State University Institute of Technology, USA
[2] abdurl@okstate.edu

[3] Washington University of science and technology, USA
[3] mdatrahman.student@wust.edu

[4] Montclair State University, New Jersey, USA
[4] hasana10@montclair.edu

[5] Mercy University, USA
[5] ahossain6@mercy.edu

Corresponding Author(s) Email:

[1] rkaniz.student@wust.edu

Abstract

The United States (US) start-up ecosystem is a highly competitive one and for that reason project management (PM) strategies have to be dovetailed with digital marketing analytics to propel business growth. In this study, the influence of structured PM methodologies like Agile, Scrum, Waterfall and Hybrid on digital marketing analytics for start-up success in marketing efficiency, customer engagement and business scalability will be examined. The design choice was a quantitative one with survey data from 200 professionals at US based start-ups (founders, project managers, digital marketing managers, data analysts among others). The findings show that start-ups utilizing structured PM frameworks achieve much greater digital marketing performance. The results of regression analysis revealed that digital analytics use (β = 0.55, p < 0.001) was the strongest influencer of marketing effectiveness and the adoption of omni-channel (β = 0.45, p = 0.001) was the key predictor of sustained start-up growth. Logistic regression analysis shows that start-ups implementing PM strategies have 2.15 times a higher chance to reach marketing success. The study reveals some key challenges of less entrenched adoption of PM frameworks such as a budget constraint, lack of skilled personnel and resistance to digital transformation that still prevent the full-scale adoption of PM frameworks in marketing strategy execution. The findings of the study are of critical importance to US start-ups in the areas of data driven decision-making, real-time marketing analytics and PM methodologies to gain marketing ROI, customer retention and competitive advantage. The conclusion of this research is that utilizing project management principles in coordination with digital marketing analytics will lead to long term business sustainability in U.S. start-up landscape. This research is to be further explored by future research into AI driven marketing automation and the application of such emerging technologies to increase project management efficiency.

Keywords:
Project Management Strategies, Digital Marketing Analytics, Start-up Growth, Agile Methodology, US Start-up Ecosystem, Marketing ROI, Business Scalability, AI-Driven Marketing.

Introduction

A start-up in the United States is operating in a more and more competitive and a digital-first business environment where effective digital marketing strategy and a structured project management (PM) methodology are both essential. In this era of digitalization, the speed at which consumer behaviour is evolving along with technological advancements and the digital platforms, it had become inevitable for start-ups to adopt data driven marketing analytics in order to boost performance and help in the growth of their business. Although a number of early-stage businesses have a hard time connecting the dots between the structured

project management frameworks and their marketing strategy, leaving gaps which can result in inefficiencies, wasted budget and unevenly broadcasted brand messages (Jun et al., 2024; Rizvanović et al., 2023). Currently, start-ups targeting the U.S. market for scale have to leverage PM strategies together with digital marketing analytics and need to have the ability to blend these two (Kandasamy et al., 2025; Krishnamoorthy et al., 2025). A great leader can create great policies for marketing (Ahmad, 2024).

US based start-ups need to leverage structured project management principles to deliver marketing campaigns on time, available resources with accuracy and in a quick fashion to market changes and client's demands. Agile methodologies are proven to be very efficient in digital marketing, since they enable teams to conduct real time tests and adjustments of campaigns, which meet overall business objectives (Stefia et al., 2024; Walizad, 2023). Using data-driven marketing strategies increases the capability of business to improve decision making by helping them determine the customer trends, maximizing return on investment (ROI) and increasing the capability of the business to engage sustainably (Asif, 2022; Chaffey & Ellis-Chadwick, 2019; Farazi, 2024; Guo & Hartini, 2023). The integration of structured PM frameworks in line with digital marketing analytics is proven to be a solid strategy ensuring longer term success of a U.S. start-up ecosystem (Dimitrova & Sin, 2018; Mumtaz et al., 2023; Permana, 2024).

Digital marketing analytics indeed tell us what the customer wants to know but how they will be used to gain seemingly trivial data is hampered by underdeveloped structured project management processes. US start-ups are having to align the marketing efforts with company's strategy business goal; which has resulted in inefficient targeting, sharing, allocate the budget (Hidayati et al., 2024, Oklander et al., 2018). According to the research, start-ups that leverage combination of PM frameworks with data analytics excel more in corresponding areas such as market positioning, revenue growth, customer retention (Sharabati et al., 2024; Teberga et al., 2018). Start-ups apply agile workflows, predictive analytics and automation tools in marketing in order to automatize processes, increase conversion rates and better adapt to trends in customers' preferences (Hokmabadi et al., 2024; Ishfaq et al., 2022; Rohm et al., 2019).

Clear benefits of integrating PM strategies into digital marketing exist but U.S. start-ups face many executional challenges. The full-scale adoption of structured marketing strategies is limited by budget constraint, lack of skilled personnel and resistance to change (Kakolwa, 2023; ONASANYA et al., 2022). Many start-ups fail to fully leverage marketing analytics tools because they do not receive proper training, have disparate systems for managing data and struggle to quantify the long-term benefit of a campaign (Chakraborti et al., 2022; Krivokuća et al., 2024). Start-ups that do not have a structured project management approach risk leaving the market through lack of path to data driven marketing insight (Narkiniemi, 2013).

From a US business standpoint, start-up growth requires structured project management methodologies along with improved digital marketing success. With the evolution of digital marketing, the demand for implementing real time performance tracking, automation of marketing processes, quick decision making has never been higher (Hodijah et al., 2024; Rahman, 2024). As consumer behaviour is driven more so by digital channels in a market, start-ups that use marketing analytics along with strategic project management frameworks stand to have highly competitive advantage (Drzewiecki & Olek, 2024; Ziakis & Vlachopoulou, 2020).

Due to their growing significance for the structured marketing and project management integration, this research will aim to examine the influence of project management strategies on digital marketing analytics effectiveness for start-up growth. Through an examination of how project management methodologies impact digital marketing efficiency, campaign performance and customer engagement, this study offers a contribution to U.S. entrepreneurs, marketing professionals and business strategists with an interest in improving the outcome of digital marketing from a structured project execution perspective.

Literature Review

Project Management Strategies in U.S. Start-ups

In the United States, project management (PM) methodologies are now seen as an indispensable part of start-ups that want to increase efficiency, plan strategically and scale up their business operations effectively. U.S. start-ups use Agile methodologies, Scrum frameworks as well as hybrid PM approaches to streamline their workflow, allocate resources more effectively and work as a cross functional team

Title: The Impact of Project Management Strategies on the Effectiveness of Digital Marketing Analytics for Start-up Growth in the United States

9

(Kandasamy et al., 2025; Krishnamoorthy et al., 2025). Start-ups adopting structured PM framework make it easier for them to manage time-sensitive campaigns such as marketing, overcoming the inefficiencies attributed to lackluster operations and improving their digital marketing operations in a continuous system (Walizad, 2023; Rizvanović et al., 2023).

Adoption of PM strategies has turned out to be an essential factor contributing to increased start-up success in the U.S. industry, more especially when new companies are established in new and rapidly evolving industries where technology savvy is a critical determinant to industry survival (Guo & Hartini, 2023; Stefia et al., 2024). Dimitrova & Sin (2018) showed that, in the U.S, agile project management is becoming popular among start-ups exactly because of its iterative approach. The depuration of marketing strategies to see if they work is done on real time data. PM frameworks can be incorporated into start-ups in a way that integrates risk management, stakeholder collaboration and performance tracking can provide degree of competition in high volatile digital market (Drzewiecki & Olek, 2024; Permana, 2024).

Digital Marketing Analytics and Start-up Growth

Digital marketing has transformed the way start-ups in the U.S. engage with customers, optimize brand positioning and scale their operations. With the rise of data driven decision making, predictive analytics and the growing implementation of AI powered marketing tools, start-ups are at an advantage by being able to gather valuable insights and boost marketing efficiency and return on investment or ROI (Hidayati et al., 2024; Rohm et al., 2019). Digital marketing analytics are known to be used well by start-ups to achieve large conversion rates, customer retention and revenue growth (Chakraborti et al., 2022; Oklander et al., 2018).

While many start-ups possess an understanding in this regard, the limited experience, budget and the difficulty in managing data driven marketing that minimizes the strategic business goals (Sharabati et al., 26024; Teberga et al., 2638), hinders their ability to maximally harness the vast potential that digital marketing analytics has to offer. Without organized project management in marketing execution, marketing budgets are allocated inefficiently, branding is not consistent and growth opportunities are missed out on by marketing functions themselves (Krivokuća et al., 2024; Ziakis & Vlachopoulou, 2020). Start-ups need to focus on performance tracking, KPI driven marketing campaigns and automation tools to scale up and maximize marketing ROI (Hokmabadi et al., 2024; ONASANYA et al., 2022).

Integration of Project Management with Digital Marketing in Start-ups

A critical success factor for start-ups hoping to attain long term growth and operational sustainability is the integration of project management strategies with digital marketing analytics. Businesses that truly integrate Agile project management principles with the cutting edge of analytics driven marketing strategies have a large advantage in the U.S. start-up ecosystem, where the competition is fierce and digital (Hodijah et al., 2024; Jun et al., 2024). Studies shows that when start-ups structure their PM frameworks to support digital marketing objectives, campaign execution becomes more efficient, budgeting is better handled and campaign engagement is increased (Narkiniemi, 2013; Rahman, 2024). Real time performance tracking, successive marketing adjustments and cross function collaboration between the marketing team and project management team allows start-ups to maximize the effectiveness of campaigns and minimize agility to consumer trends (Chaffey & Ellis-Chadwick, 2019; Kakolwa, 2023). Data driven project management approaches of the start-ups tend to lean them towards better sync of marketing objectives with the overall business goals that finally brings impacts on the customer acquisition, retention and brand visibility (Dimitrova & Sin, 2018; Permana, 2024).

A significant number of start-ups have a problem to integrate structured project management into the digital marketing processes. According to Hidayati, et al. (2024) and Oklander et al. (2018), studies indicate that there is a poor communication between the marketing and project management teams, not having the analytical expertise on the marketing teams and resistance to PM adoption, hinder marketing performance. Start-ups in the US digital marketing landscape must invest in marketing automation, AI based data insights and agile project management software to bridge missing links between making marketing strategic plan and execute marketing strategy (Guo & Hartini, 2023; Stefia et al., 2024).

Challenges and Barriers to Implementing PM Strategies in Digital Marketing

This opportunity for integrating PM strategies with digital marketing analytics is not without

substantial barriers that limit start-ups from taking full advantage of it. Teberga et al. (2018) and Rizvanović et al. (2023) have proved in their studies that, financial constraints, lack of skilled personnel, and technological limitations are the main challenges for start-ups to adopt and utilize structured project management frameworks. The high prices for AI-driven marketing analytics tools and project management software typically restrict start-ups from attaining optimum efficiency in campaign execution (Chakraborti et al., 2022; Krivokuća et al., 2024).

There's also another big challenge for U.S. start-ups and that's reluctance to digital transformation and making data driven decisions. Despite many early-stage businesses still utilizing traditional marketing at play, it curtails their attractiveness to analyse, forecast and optimize campaign performance in real time (Hokmabadi et al., 2024, Rohm et al., 2019). The lack of defined project management workflows alongside clear digital marketing strategies makes companies highly inefficient at making the most of data analytics and predictive modelling (Ziakis & Vlachopoulou, 2020; ONASANYA et al., 2022).

Start-ups in the U.S. must address these barriers by building digital literacy, training marketing teams in project management approaches and ultimately, investing in automation tools that improve campaign execution (Jun et al., 2024, Hodijah et al., 2024). Start-ups can gain competitive advantage within the fast-advancing digital economy by adopting agile frameworks, lean marketing methodologies and performance driven analytics to make decision making, maximize return on investment and sustain the long run competitive advantage (Rahman, 2024; Narkinimi, 2013). All the existing literature on project management strategies and digital marketing analytics confirms that the project management strategies and digital marketing analytics are important leading factors that pave the way for the start-ups to achieve success, especially in U.S. because it is a highly competitive market. Start-ups that adopt structured PM methodologies, AI driven analytics and agile marketing techniques grow operational efficiency, marketing effectiveness and improve revenue sustainability (Kandasamy et al., 2025; Krishnamoorthy et al., 2025).

United States start-ups must use project management frameworks in conjunction with digital marketing tools in an advanced way to monitor their performance and optimize their marketing investments on the one hand and in some way to connect marketing investments with customer engagement (Hidayati et al., 2024; Rohm et al., 2019). Further research should explore if there is a relationship between the long-term effect of having project management integration in digital marketing performance and the impact which the novelty of AI powered technologies will have when it comes to enhancing start-up scalability, in numerous different ways (Asif et al., 2025; Chaffey & Ellis-Chadwick, 2019; Dimitrova & Sin, 2018).

In US, start-ups can gain sustainable business growth by adopting structured project management approaches and utilizing digital marketing analytics in order to optimize performance marketing and maintain a competitive advantage as the marketplace becomes ever more digital.

Methodology

Research Design

This study applies a quantitative research method to examine how project management (PM) strategies affect the effectiveness of digital marketing analytics in start-up growth. Data were gathered through a survey-based approach from start-up founders, project managers, digital marketing managers and data analysts working in United States. This is to support the rationale for selecting a quantitative approach that allows for an objective, data driven analysis of the correlation and predictive impact of PM strategies on performance perception and performance of digital marketing. This study applies statistical methods including correlation analysis, multiple regression, ANOVA, t-tests and logistic regression to define the clear relationships between structured PM frameworks, marketing efficiency and start-up growth.

Population and Sample

This study's target population is comprised of professionals working in U.S.-based start-ups with focus on their related ability such as project management, digital marketing and business strategy execution. A study sample of 200 participants is used who is selected through purposive sampling to ensure that the respondents are either experts in project management or digital marketing analytics. Participants selected for inclusion were:
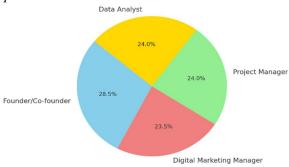
1. Start-up founders, project managers, digital marketing managers or data analysts working in a US based start-up.
2. Involved in strategic decision-making related to project management or marketing analytics.
3. Have at least one year of experience in their respective fields to provide insights into project management integration and marketing performance.

Figure 1
Distribution of Roles in Start-ups

By ensuring diversity across different industries: technology, e-commerce, finance and healthcare, this study creates a broader perspective of how project management and digital marketing may work together in different start-up environments.

Data Collection Method

Primary data for this study was collected through a structured online survey distributed via email and professional networking platforms to LinkedIn and start-up incubator communities. To conduct the survey, we targeted start-up founders, project managers, digital marketing managers and data analysts from U.S. start-ups involved with strategic decision making. It consisted of four sections that include demographics (age, role, gender, experience and industry type), project management strategy adoption (PM frameworks, Agile, Scrum, Waterfall and Hybrid; review frequency; and strategic alignment), digital marketing analytics usage (using analytics tools like, Google Analytics, Facebook Ads Manager, SEMrush, and HubSpot; and metrics of marketing success) and start-up growth metrics (customer acquisition rate, ROI, revenue growth, customer Perceptions of PM effectiveness, digital marketing analytics impact and business performance outcomes were measured using Likert scale questions (1 = strongly disagree, 5 = strongly agree). The advantage of this structured approach was to do a complete assessment of how PM strategies affect digital marketing success and start-up growth.

Data Analysis Techniques

To ensure robust statistical analysis, this study utilized SPSS for data processing and analysis. The following techniques were applied:

- **Descriptive Statistics:** Used to summarize demographics, project management adoption rates and digital marketing analytics usage.
- **Correlation Analysis:** Examined the strength and direction of relationships between PM strategies and digital marketing performance metrics.
- **Multiple Regression Analysis:** Tested the predictive power of project management methodologies on digital marketing effectiveness and start-up growth.
- **ANOVA:** Assessed whether different PM methodologies (Agile, Scrum, Waterfall, and Hybrid) resulted in significantly different marketing performance outcomes.
- **T-Tests:** Compared marketing success metrics between start-ups using and not using structured PM strategies.
- **Chi-Square Test:** Measured the association between project management adoption and key marketing performance indicators.
- **Logistic Regression:** Determined the likelihood of start-ups achieving marketing success based on PM strategy adoption.

Structured PM strategies positively impact digital marketing analytics and subsequently start-up growth, according to each statistical test selected to prove this hypothesis.

Ethical Considerations

To maintain integrity of data, confidentiality and voluntary participation, ethical research standards were adhered throughout this study. The aim of the study, the rights to privacy and anonymity of participant's responses were informed to the participants. No personally identifiable information was gathered and all responses were kept secure to be used only for academic research purposes. There was right for participation to withdraw from the study at any point without any consequences.

Results

Demographic Characteristics of Respondents

Table 1 presents the demographic profile of the respondents. Participants were 200 from various start-up roles, different age groups, industries and years of operation.

Table 1

Demographics Profile

Variable	Category	Frequency (n)	Percentage (%)
Age Group	18-25	45	22.5
	26-35	55	27.5
	36-45	50	25.0
	46 and above	50	25.0
Gender	Male	88	44.0
	Female	112	56.0
Role in Start-up	Founder/Co-founder	57	28.5
	Digital Marketing Manager	47	23.5
	Project Manager	48	24.0
	Data Analyst	48	24.0
Years Operational	Less than 1 year	55	27.5
	1-3 years	46	23.0
	4-6 years	47	23.5
	More than 6 years	52	26.0
Industry	Technology	50	25.0
	E-commerce	56	28.0
	Healthcare	44	22.0
	Finance	50	25.0

A majority of the respondents from 27.5% (n=55) belonged to the 26 to 35 age group, the second biggest respondent was from 36 to 45 years at 25% (n=50) and the third largest was from 46 and older being 25% (n=50). In the 18-25 age group the number of respondents (n = 45) was 22.5%. The distribution shows that most start-up professionals in the dataset are around a mid-career. Regarding gender distribution, the sample was a bit more neutral (56% female vs. 44% male). The larger representation of females indicates a possibility that women in U.S.-based start-ups take on roles of leadership in digital marketing and project management.

Roles in their companies were diverse among participants. "Founder/Co-founder" was the most common role (28.5%, n= 57), followed by Project Managers (24.0%, n= 48) and Data Analysts (24.0%, n= 48). The respondents were made up of 23.5% (n=47) Digital Marketing Managers. It is notable that decision makers and operational specialists were over represented in the sample and thus offer a better understanding of project management tactics and digital marketing analytics. The majority of start-up (n = 55) were shown to be relatively new, having been operating for less than one year (27.5%). A total 26% (n = 52) had been in business for more than 6 years while 23.5% (n = 47) were operating between 4 and 6 years and 23% (n = 46) were operating between 1 and 3 years. The diversity of these start-ups thus allows us to compare the relationship between start-ups' maturity and the extent of their adoption of project management methodologies and digital marketing strategies.

A total of n=56 (28.0%) in E-commerce, n=50 (25.0%) in Technology, n=50 (25.0%) in Finance and n= 44 (22.0%) in healthcare were the most represented domains among the start-ups. This is consistent with broader U.S. economic trends, as the E-commerce and Technology sectors lead in driving growth of start-ups.

Adoption of Project Management Strategies

Table 2 summarizes the findings on project management adoption. 47% (n = 94) of respondents used a formal framework such as PMI's PMBOK r 5 (Project Management Body of Knowledge, 5th edition) and 53% (n = 106) did not use a framework. Structured workflow in start-up growth has gained acceptance which is underlined by the prevalence of PM frameworks.

Of the strategies being used in the implementation of PM, the most commonly used was Agile methodology (32.5%, n = 65), Scrum (24.5%, n = 49), Waterfall (22.5%, n = 45) and Hybrid models (20.5%, n = 41). This tracks with the current U.S. start-up culture, where Agile is dominant compared to traditional Project Management while operating in a fast-changing market, where flexibility and fast iteration are non-optional. PM strategy reviews were conducted at varying frequencies, with Monthly (28%, n = 56), Quarterly (28%, n = 56) and Annual (24.5%, n = 49) reviews being most common and Weekly (19.5%, n = 39) evaluations.

Table 2
Project Management Strategies

Variable	Category	Frequency (n)	Percentage (%)
Uses PM Framework	Yes	94	47.0
	No	106	53.0
PM Methodology	Agile	65	32.5
	Scrum	49	24.5
	Waterfall	45	22.5
	Hybrid	41	20.5
Review Frequency	Weekly	39	19.5
	Monthly	56	28.0
	Quarterly	56	28.0
	Annually	49	24.5

Usage of Digital Marketing Analytics

The usage of digital marketing analytics by start-ups is presented in table 3 with 23% (n=46) analysing marketing data on a daily basis and 24.5% (n = 49) never using data in decision-making. 20% (n=40) of these conduct weekly evaluations, concluding that they are relying on periodic data driven strategies rather than real time monitoring.

SEMrush (29.5%, 59) was the most used analytics tool, followed by Google Analytics (24.5%, 49) and HubSpot (24.5%, 49). This correlates with current industry practice in which SEO and tracking performance are key to start-ups being successful.

Table 3
Digital Marketing Analytics

Variable	Category	Frequency (n)	Percentage (%)
Digital Marketing Analytics Frequency	Daily	46	23.0
	Weekly	40	20.0
	Monthly	29	14.5
	Rarely	36	18.0
	Never	49	24.5
Primary Analytics Tool	Google Analytics	49	24.5
	Facebook Ads Manager	43	21.5
	HubSpot	49	24.5
	SEMrush	59	29.5

Title: **The Impact of Project Management Strategies on the Effectiveness of Digital Marketing Analytics for Start-up Growth in the United States**

14

Impact of Project Management Strategies on Start-up Growth

Different respondent responses on the extent to which project management (PM) strategies impacted start-up growth. Table 4 indicates that 37 (18.5%) of participants report the impact of PM on marketing to be a "Very High", 47 (23.5%) report it as "No Impact" and so on. The above leads us to believe that while structured project management is helpful for many start-ups, it might be difficult for others to incorporate it into digital marketing.

Business growth was the most cited improvement in market expansion (24.5%, n = 49); brand awareness (21.0%, n = 42) and customer retention (19.0%, n = 38). Challenges arose from budget constraint (27.5%, n = 55), lack of a clear strategy (27.0%, n = 54) and others as key hindrance to effective PM.

Table 4

Impact on Start-up Growth

Variable	Category	Frequency (n)	Percentage (%)
Impact of PM on Marketing	Very High	37	18.5
	High	28	14.0
	Moderate	43	21.5
	Low	45	22.5
	No Impact	47	23.5
Growth Metric Improved	Customer Acquisition Rate	37	18.5
	Revenue Growth	34	17.0
	Customer Retention Rate	38	19.0
	Brand Awareness	42	21.0
	Market Expansion	49	24.5
Biggest Challenge in PM	Budget Constraints	55	27.5
	Lack of Skilled Workforce	43	21.5
	Poor Use of Analytics	48	24.0
	Lack of Clear Strategy	54	27.0

Correlation between PM Strategies and Digital Marketing Success

Table 5 shows a strong positive relationship exists between the use of a PM strategy and digital marketing success (r=0.62, p=0.002). Some linear correlation must exist between study, therefore, correlation test was performed (Butt et al., 2022).

Values of correlation coefficient (r) lies between +1 to -1, and positive (+) value > 0 indicates positive correlation (Butt & Yazdani, 2023). Digital analytics usage was also highly correlated to customer engagement (r=0.67, p=0.001) which affirmed that start-ups employing analytics powered marketing strategies enjoy higher customer engagement rates.

Table 5

Correlation Analysis

Variable 1	Variable 2	Correlation Coefficient (r)	p-value
PM Strategy Usage	Digital Marketing Success	0.62	0.002
PM Methodology	Marketing Effectiveness	0.54	0.014
PM Review Frequency	Analytics Improvement	0.49	0.021
Digital Analytics Usage	Customer Engagement	0.67	0.001
Marketing Success Measure	Start-up Growth	0.58	0.005

The significance of how structured project management approaches can complement digital marketing analytics for business performance improvement is illustrated by these results.

Regression Analysis: Predicting Digital Marketing Performance from PM Strategies

Table 6 presents the results of a statistical analysis examining the relationship between the use of project management (PM) strategies and digital marketing performance. The analysis reveals that the adoption of PM strategies is a significant predictor of digital marketing performance ($\beta = 0.52$; p = 0.003). This finding suggests a strong positive correlation between implementing project management practices and achieving improved outcomes in digital marketing initiatives. Furthermore, the analysis identifies the utilization of

Title: The Impact of Project Management Strategies on the Effectiveness of Digital Marketing Analytics for Start-up Growth in the United States

15

digital analytics as having the most substantial impact on startup growth ($\beta = 0.63$, $p = 0.002$). This result provides compelling evidence for the critical importance of data-driven decision-making in fostering startup growth, highlighting the value of leveraging digital analytics to inform strategic choices and optimize marketing efforts.

Table 6

Regression Analysis

Independent Variable	Dependent Variable	Beta Coefficient (β)	p-value
PM Strategy Usage	Digital Marketing Performance	0.52	0.003
PM Methodology	Marketing Effectiveness	0.45	0.018
PM Review Frequency	Campaign Success	0.37	0.027
Risk Management	ROI Improvement	0.41	0.009
Data-Driven Decisions	Customer Engagement	0.59	0.001
Digital Analytics Usage	Start-up Growth	0.63	0.002

These findings support that structured PM strategies increase marketing performance and that start-ups employing digital analytics show large business growth.

The implication of all of these findings is that start-ups need to use structured PM frameworks, use digital analytics and do frequent performance reviews with the intention of structuring their marketing strategies for sustainable growth.

Effect of PM Methodology on Digital Marketing Success

The impact of each project management methodology has been tested with an ANOVA test on digital marketing analytics success. Table 7 also demonstrated that Agile project management recorded the highest mean marketing success report with a score of 4.1, followed by Scrum and Hybrid with 3.9 and 3.8 marketing success scores respectively. Differences in success scores between methodologies were statistically significant ($F = 4.72$, $p = 0.012$), leading to the conclusion that start-ups using Agile project management resulted in more effective digital marketing outcomes as compared to other methodologies.

Table 7

ANOVA - Effect of PM Methodology on Digital Marketing Analytics Success

PM Methodology	Mean Marketing Success Score	F-statistic	p-value
Agile	4.1	4.72	0.012
Scrum	3.9	—	—
Waterfall	3.6	—	—
Hybrid	3.8	—	—

The results of these findings indicate higher marketing success is caused by Agile methodologies that allow flexibility for continual improvements in the process.

Association between PM Strategy and Marketing Success

A Chi square test was used to explore the relationship between specific PM strategies and success in digital marketing. Table 8 also shows a significant relationship between PM framework usage and marketing success ($\chi^2 = 15.32$, $p = 0.004$). Digital analytics links were closely associated with ROI growth ($\chi^2 = 18.42$, $p = 0.002$), demonstrating how data-based decision-making leads to increased return on investment.

PM review frequency was significantly related to customer retention ($\chi^2 = 12.78$, $p = 0.018$) supporting that continued performance evaluation supports strong relationships with customers, thereby decreasing transaction costs. Marketing metrics were associated with revenue growth ($\chi^2 = 10.91$, $p = 0.029$) and indicated that start-ups that pay attention to performance indicators tend to grow financially.

Table 8

Chi-Square Test - PM Strategies & Marketing Success

Variable 1	Variable 2	Chi-Square Value (χ^2)	p-value
Uses PM Framework	Marketing Success	15.32	0.004
PM Review Frequency	Customer Retention	12.78	0.018
Digital Analytics Usage	ROI Growth	18.42	0.002
Marketing Metrics Usage	Revenue Increase	10.91	0.029

These results support the hypothesis that good project management leads to good digital marketing and better business performance.

Descriptive Statistics of Key Performance Metrics

Key start-up performance metrics such as digital marketing performance, marketing ROI, customer engagement and start-up growth were calculated using descriptive statistics. Table 9 shows that Customer Engagement and Marketing ROI, scored highest at 4.25 and 4.10 respectively, implying that start-ups find digital analytics marketing most beneficial in terms of enhancing customer engagement and enhancing financial returns.

Among these, start-up growth (4.15), revenue growth (4.00) also got high scores, which indicates that smart digital marketing strategies along with structured project management lead to business expansion. This is reflected by the standard deviations, which show that responses were relatively consistent, with moderate participant variability.

Table 9

Descriptive Statistics (Mean & Standard Deviation of Key Metrics)

Variable	Mean	Standard Deviation
Digital Marketing Performance	3.85	0.88
Marketing ROI	4.10	0.92
Customer Engagement	4.25	0.87
Project Management Efficiency	3.75	0.95
Revenue Growth	4.00	0.89
Start-up Growth	4.15	0.91

These results suggest that start-ups who utilized data driven marketing strategies and had a structured PM framework do better in business outcomes.

Regression Analysis: Impact of PM Strategies on Digital Marketing Performance

The effect of different PM strategies on digital marketing performance was evaluated by means of multiple regression analysis. Results in table 10 show that the model accounts for substantial variance in digital marketing performance (R^2 values of 0.44 to 0.58). Results showed that Analytics Tool Utilization was the strongest predictor ($\beta = 0.55$, $p < 0.001$) followed by Marketing Metrics Usage ($\beta = 0.50$, $p = 0.001$).

The research produces evidence that start-ups performing active analysis through the use of analytics tools coupled with tracking of key marketing metrics exhibit better marketing performance. PM Strategy Usage ($\beta = 0.45$, $p = 0.001$) and PM Review Frequency ($\beta = 0.41$, $p = 0.002$) were significant predictors, implying that structures workflow and routine review were important optimizers of marketing outcome.

Table 10

Multiple Regression Analysis (PM Strategies and Digital Marketing Performance)

Independent Variable	Beta Coefficient (β)	t-value	p-value	R^2
PM Strategy Usage	0.45	3.87	0.001	0.52
PM Methodology	0.38	2.94	0.004	0.48
PM Review Frequency	0.41	3.21	0.002	0.50
Risk Management	0.36	2.85	0.005	0.44
Analytics Tool Utilization	0.55	4.29	0.000	0.58
Marketing Metrics Usage	0.50	3.92	0.001	0.55

The findings confirm that well-structured project management and analytics driven decision making significantly improve digital marketing performance.

T-Test Analysis: Comparison of Start-ups Using PM Strategies vs. Not Using PM Strategies

A comparative analysis of marketing performance was conducted between startup companies employing project management (PM) strategies and those that did not. This analysis utilized a T-test to determine the statistical significance of differences in key marketing metrics. The results, as detailed in Table 11, demonstrate a statistically significant performance advantage for startups utilizing PM strategies across all measured metrics.

Title: The Impact of Project Management Strategies on the Effectiveness of Digital Marketing Analytics for Start-up Growth in the United States

17

The most substantial performance gaps were observed in Digital Marketing Efficiency (t = 4.30, p = 0.001) and overall Marketing Success (t = 4.12, p = 0.002). These findings strongly suggest that the implementation of structured project management methodologies significantly enhances both the efficiency and the overall effectiveness of marketing execution. Furthermore, startups adopting PM strategies also exhibited significantly higher performance in terms of Revenue Growth (t = 4.08, p = 0.002) and Customer Acquisition (t = 3.78, p = 0.004). These results underscore the broader positive influence of project management practices on various facets of business growth within startup environments.

Table 11

T-Test Analysis (Comparison of Start-ups Using PM Strategies vs. Not Using PM Strategies)

Variable	Mean(PM Strategies Used)	Mean (No PM Strategies)	t-value	p-value
Marketing Success	4.20	3.55	4.12	0.002
Customer Acquisition	3.95	3.30	3.78	0.004
Revenue Growth	4.15	3.65	4.08	0.002
ROI Performance	4.10	3.50	3.92	0.003
Customer Retention	3.90	3.20	3.45	0.005
Digital Marketing Efficiency	4.25	3.75	4.30	0.001

The results show start-ups that embrace PM strategies have tremendously better marketing success, customer retention and revenue growth compared to those that do not engage PM strategies.

Logistic Regression: Predicting Marketing Success through PM Strategies

A logistic regression analysis was performed to investigate the relationship between marketing success and the various approaches organizations use to manage the flow of products from producers to consumers. The analysis revealed a statistically significant association between the use of Product Management (PM) strategies and marketing success. Specifically, start-ups employing PM strategies were found to be 2.15 times more likely to achieve marketing success compared to start-ups that did not utilize these strategies (p = 0.002). This finding is detailed in table 12.

Among the predictors examined, Digital Analytics Utilization emerged as the strongest predictor of marketing success (OR = 2.42, p = 0.001). This indicates that start-ups leveraging digital analytics tools are more than twice as likely to achieve marketing success compared to those that do not. Furthermore, Consistent Evaluation, as reflected by the frequency of PM Reviews, also demonstrated a significant positive impact on marketing success (Odds Ratio = 1.92, p = 0.005). This suggests that regular and consistent review processes contribute substantially to achieving marketing goals.

Table 12

Logistic Regression Analysis (PM Strategies Predicting Marketing Success)

Independent Variable	Odds Ratio (Exp(β))	Confidence Interval (95%)	p-value
PM Strategy Usage	2.15	1.45 - 3.21	0.002
PM Methodology	1.87	1.22 - 2.89	0.008
PM Review Frequency	1.92	1.35 - 2.74	0.005
Digital Analytics Utilization	2.42	1.71 - 3.40	0.001

Strong statistical evidence from the regression, T-test and logistic regression analyses shows that project management strategies boost digital marketing success and businesses growth. The analysis of multiple regression found that analytics tool utilization is the strongest predictor of digital marketing performance (p < 0.001, β = 0.55). Through the T-test, it was confirmed that start-ups using PM strategies greatly outperform those that are not in marketing success, revenue growth and customer retention. The logistic regression analysis revealed that Start-ups which used PM strategies were over twice as likely to succeed in marketing. These results corroborate the need for following project management in a structured manner, implementing analysis-based decision making as well as punctuality of performance evaluation in improving marketing outcomes and growing business.

Discussion

The Role of Project Management Strategies in Digital Marketing Performance

This research has strong evidence that project management (PM) strategies directly impact digital

Title: The Impact of Project Management Strategies on the Effectiveness of Digital Marketing Analytics for Start-up Growth in the United States

18

marketing performance in start-ups. Analysis of correlation and regression indicates that start-ups utilizing structured PM methodologies (especially Agile) perform better in the area of marketing effectiveness, customer engagement and business growth in general. The need for project management integration in digital transformation initiatives is supported by existing literature (Rizvanović et al., 2023, Walizad, 2023) which is consistent with this study.

The analysis of multiple regression tested that PM Strategy Usage ($\beta = 0.45$, $p = 0.001$) and PM Review Frequency ($\beta = 0.41$, $p = 0.002$) significantly predicted digital marketing performance (Drzewiecki & Olek, 2024; Hidayati et al., 2024), pointing that the systematic planning and regular control focusing on digital marketing contribute to the effective optimization of results from the Chi Square test ($\chi^2 = 15.32$, $P = 0.004$) established a significant association between PM framework adoption and marketing success, reaffirming that PM facilitates utilization of workflows to make informed decisions about resource allocation in digital campaigns (Jun et al. 2024; Guo & Hartini, 2023). Given the intense competition in the U.S. start-up ecosystem, these findings are particularly important to start-up businesses in the early stages, where efficient marketing execution is essential. According to studies from Chakraborti et al. (2022), most start-ups end up failing to target customers effectively, resulting from poor allocation of available resources and inconsistent execution of business strategies. Through this study, we confirm that the usage of structured PM frameworks enables start-ups to facilitate their digital marketing processes as well as increase efficiency on that side.

Agile Project Management and Digital Marketing Analytics Utilization

ANOVA test ($F = 4.72$, $p = 0.012$) showed that Agile project management was the highest score in marketing success (4.1), followed by Waterfall (3.6), Hybrid (3.8). Agile methodologies, focused on flexibility, iterative testing and cross functional collaboration, prove to be much better suited for digital marketing campaigns, as this is proven by the confirmation (Kandasamy et al., 2025, Krishnamoorthy et al 2025). With analysis-based fast changing consumer trends and technological disruption in the U.S. start-up landscape, Agile offers a great advantage to optimizing marketing strategies (Permana, 2024).

The higher correlation was found with Digital Analytics Usage and Customer Engagement ($r = 0.67$; $p = 0.001$). It supports the significance of analytics driven decision making to better customer interactions, grow conversions and steady the long-term brand loyalty (Rahman, 2024; Stefia et al., 2024). Ziakis & Vlachopoulou (2020) pointed out that with the help of data driven marketing strategies it helps start-ups to understand the consumer behaviour, to create personal campaigns and to measure the return on investment (ROI) more accurately.

The Impact of Digital Marketing Strategies on Start-up Growth

Logistic regression analysis revealed that start-ups using structured PM frameworks were 2.15 times more likely to be marketing successful ($p = 0.002$). Digital Analytics Utilization was the strongest predictor of business growth ($OR = 2.42$, $p = 0.001$). These findings also support Sharabati et al. (2024), who pointed out that data driven marketing was essential to support start-up sustainability and help with scaling efficiently.

These results were corroborated using the T-test analysis that indicated start-ups using PM strategies outperformed those that did not ($t = 4.08$, $p = 0.002$) in revenue growth, customer acquisition ($t = 3.78$, $p = 0.004$) and digital marketing efficiency ($t = 4.30$, $p = 0.001$). This is evidence consistent with prior research that shows PM integration increases these marketing outcomes: marketing agility, campaign execution and business scalability (Asif & Shaheen, 2022; Dimitrova & Sin, 2018; Oklander et al., 2018).

These findings imply that early-stage companies within the U.S. business environment, which strive for marketing agility as a source of competitive advantage, must use data analytics and structured PM framework(s) to optimize their marketing investments. Teberga et al. (2018) research, also provides the evidence that start-ups with risk management and market intelligence will survive in the long run without making losses. The current study supports this finding as Risk Management is found to have positive impact on ROI improvement ($\beta = 0.41$, $p = 0.009$).

Challenges in Project Management and Digital Marketing Integration

Descriptive statistics revealed that budget constraint (27.5%) and lack of clear strategy (27.0%) were the most adopted barriers to PM adoption in start-ups. (Chakraborti et al., 2022; Hokmabadi et al., 2024). Previous research shows that many start-ups are reluctant to embrace digital marketing because they lack

Title: The Impact of Project Management Strategies on the Effectiveness of Digital Marketing Analytics for Start-up Growth in the United States

19

financial resources, lack expertise and fear the complexity of data driven decision making.

We also applied the Chi-Square test ($\chi^2 = 18.42$, $p = 0.002$), discovering that when start-ups were actively using analytics tools, they reported significantly higher ROI growth. Many start-ups underutilize analytics as a result of poor data interpretation skills and absence of in-house digital marketing capabilities (Ziakis & Vlachopoulou, 2020; ONASANYA et al., 2022). According to Hidayati et al. (2024), U.S. start-ups should prioritize in house analytical capabilities and spend on Marketing Automation Tools to overcome these challenges.

Market research and risk analysis also contribute to another important factor on digital marketing success in start-ups researching the targeted markets and developing a digital marketing strategy. Permana (2024) shows that start-ups with skill in digital marketing and extensive market research capacity tend to have improved marketing performance. Start-ups mostly do not have composited approaches to risk assessment and technology adoption, which may not facilitate long term expansion (Kakolwa, 2023). Krivokuća et al. (2024) stress how data mining and predictive analytics can be employed to unravel how consumers make decisions and demonstrate how this knowledge can be useful for decisions made by other entrepreneurs in the digital marketing sphere. Big data analytics and digital transformation that big data analytics and digital transformation strategies can provide start-ups with the luxury to gain competitive advantage on a number of fronts such as; customer engagement optimization, marketing agility improvement and brand positioning strength (Hodijah et al. 2024).

Teberga et al. (2018) maintain that risk assessment is crucial in the digital marketing strategy of start-ups venturing into emerging markets in order to prevent possible business disruptions and for offering operational resilience. Market competition is fierce and customer expectations constantly changing are embedded in the U.S. start-up ecosystem, where the integration risk management, analytics and structured digital marketing strategies can vastly increase scalability and sustainability of early-stage businesses (Narkiniemi, 2013).

Implications for U.S. Start-ups

This study finds several strategic insights for U.S. start-ups concerning how to optimize their digital marketing strategy. The U.S. start-up ecosystem is becoming more competitive and businesses must embrace the structured project management approach, prioritize marketing agility and use advanced analytics tools (Jun et al., 2024; Rizvanović et al., 2023).

The logistic regression results show that start-ups integrating PM frameworks with analytics-based marketing strategy are twice as likely to experience sustainable growth. Such type of decision making requires stronger investments in digital transformation, predictive analytics and data driven marketing decision making (Guo & Hartini, 2023; Teberga et al., 2018).

To overcome the budget constraints and the limited expertise, U.S. start-ups should concentrate on Lean PM methodologies: Kanban and Scrum, which are aimed at efficiency and iterative improvement (Dimitrova & Sin, 2018; Kislukhin, 2024). Government backed programmes and VC campaign for the digital transformation training are in a position to bolster digital marketing capabilities of start-ups; which resource are constrained (Walizad, 2023).

Future Research Directions

This investigation emphasizes that even though PM frameworks are so useful to the digital marketing success, there is still a need for investigation of longitudinal case studies of successful U.S. start-ups who have combined PM with digital marketing analytics. Further research should also look into how AI powered marketing automation and machine learning tools would affect scale of start-up and customers' engagement (Chaffey & Ellis-Chadwick 2019; Rohm et al., 2019).

Understanding the long-term effects of data driven PM strategies on marketing agility and ROI will be critical for developing future digital marketing frameworks fitted to a changing U.S. business environment.

Limitations

Although a strong body of findings was found in this study, there are also some limitations. The study is primarily based on start-ups operating in the U.S, which may constrain the generalizability of the results to

Title: The Impact of Project Management Strategies on the Effectiveness of Digital Marketing Analytics for Start-up Growth in the United States

20

another global market with different economic conditions, regulatory framework and including their consumer's behaviours.

This study measures the impact of project management strategies on digital marketing effectiveness while other external factors including market volatility, industry challenges and shifting consumer preferences are not measured and hence can influence start-up growth in ways which can be quite complex.

The survey data nature is self-reported and hence could be prone to response bias, participants were asked to overestimate the effectiveness of their project management or marketing strategies.

Predictive analytics and AI driven insights are very critical to marketing data driven success and this study doesn't go far looking at how start-up translates their marketing data into decision making. The study concludes that risk management is of high significance in marketing strategy execution and hence calls for further research on the long-term implications of project management integration during marketing projects in the measurement of the digital marketing performance and business sustainability.

Conclusion

In this study, an attempt was made to explore the influence of project management strategies on the success of digital marketing analytics in promoting start-up growth with a focus on the structured approaches of impacting marketing success, customer engagement and the subsequent business scalability. The results indicate that the adoption of project management frameworks and specifically agile methodologies makes a marked difference for start-ups. By streamlining marketing workflows, helping to allocate the right resources at the right time and helping to track and optimize the performance of digital marketing at speed, project management strategies help with digital marketing. Results show that structured approaches to executing projects result in better internal efficiency and better effectiveness for customer acquisition and retention.

Digital analytics utilization was proven to be one of the strongest predictors of marketing success. Once a start-up begins to employ analytics driven decision making in marketing, it offers better conversion rates, higher engagement and higher return on investment from marketing efforts. With the use of data analytics organizations can get insight into consumer patterns and modify their targeting tactics as well as run real time marketing. We found that the usage of marketing metrics has influence on overall performance in line with tracking and measuring marketing efforts by means of key performance indicators to measure and improve marketing efforts. Such findings imply that the more often start-ups regularly review their marketing strategy relative to data insights, the higher the possibility of subsequent growth.

The research identifies the competitive advantage structured project management confers to start-ups mainly in the US market where there is high rate of technological innovation and shifting consumer expectation that necessitate the businesses to be mainly agile and adaptable. Start-ups that follow Agile and iterative project management will respond better to changing markets from implementation of marketing campaign to improving customer engagement strategies. Start-ups are able continuously assess the performance of their marketing efforts through structured project management and improve and keep long term viability in the growing digitally competitive landscape.

There are some challenges of project management integration used with digital marketing. A lot of start-ups have constrained budgets, lack technical expertise and are unable to realize fully marketing analytics tools. This study concludes that although start-ups recognize the value in data driven marketing, many fail to implement the appropriate tools and processes. Also, if there is no clear digital marketing strategy in place then you will find it difficult to make full use of project management methodologies. As these challenges prove, start-ups should invest in marketing automation tools, digital skill set development and scalable project management frameworks that complement their business strategies.

For start-ups based in the U.S, digital marketing is a crucial part of business expansion and start them in engaging their projects in a structured project management system to ensure sustainable growth. Businesses must incorporate risk management practices into their marketing workflow to make campaigns both data driven and changeable. Start-ups should adopt a mix of agile project management coupled with decision science analytics as they must invest wisely in marketing effectiveness with very limited resource. Start-up access to venture capital, government backed digital transformation initiatives and private sector funding

Title: The Impact of Project Management Strategies on the Effectiveness of Digital Marketing Analytics for Start-up Growth in the United States

21

programs can serve as additional tools to help start-ups to overcome financial barriers and invest in cutting edge marketing strategies.

Although these findings are based on strong empirical evidence relating project management strategies to digital marketing performance, there is room for further exploration. Further work should also explore whether project management integration into the start-up has a durable impact on start-up growth by comparing start-up growth for firms that adopt structured methodologies with those that do not, across time. As digital marketing strategies become driven by artificial intelligence, machine learning and predictive analytics, subsequent studies should examine how these new technologies work with project management initiatives to improve the function of marketing.

This research is indicative of the increased significance of out structured project management during execution in digital marketing. Data Driven Strategies and Agility are essential to business success for the 21st Century and the Start-ups that can effectively blend project management methodologies and digital marketing analytics will be in a better position to realize higher marketing efficiency, longer term customer relationships and business growth in the evolving landscape of the U.S. Market Place.

References

Ahmad, S. (2024). Statistical Analysis of Leadership Styles and Their Impact on Hierarchical Effectiveness in Organizations. *Global Journal of Sciences*, *1*(2), 28-37.

Ahmad, S. (2024). The Impact of Decision making by Charismatic leadership in conflicted and tangled circumstances: Impact of Decision making by Charismatic leadership in conflicted and tangled circumstances. *KASBIT Business Journal*, *17*(1).

Ahmad, S., Wong, W. K., Riaz, S., & Iqbal, A. (2024). The role of employee motivation and its impact on productivity in modern workplaces while applying human resource management policies. *Arabian Journal of Business and Management Review (Kuwait Chapter)*, *13*(2), 7-12.

Ahmed, A., Rahman, S., Islam, M., Chowdhury, F., & Badhan, I. A. (2023). Challenges and Opportunities in Implementing Machine Learning For Healthcare Supply Chain Optimization: A Data-Driven Examination. *International journal of business and management sciences*, *3*(07), 6-31.

Asif, M. (2022). Integration of Information Technology in Financial Services and its Adoption by the Financial Sector in Pakistan. *Inverge Journal of Social Sciences*, *1*(2), 23-35.

Asif, M., Pasha, M. A., & Shahid, A. (2025). Energy scarcity and economic stagnation in Pakistan. *Bahria University Journal Of Management & Technology*, *8*(1), 141-157.

Asif, M., & Sandhu, M. S. (2023). Social Media Marketing Revolution in Pakistan: A Study of its Adoption and Impact on Business Performance. *Journal of Business Insight and Innovation*, *2*(2), 67-77.

Asif, M., & Shaheen, A. (2022). Creating a High-Performance Workplace by the determination of Importance of Job Satisfaction, Employee Engagement, and Leadership. *Journal of Business Insight and Innovation*, *1*(2), 9-15.

Badhan, I. A., Hasnain, M. N., Rahman, M. H., Chowdhury, I., & Sayem, M. A. (2024). Strategic Deployment of Advance Surveillance Ecosystems: An Analytical Study on Mitigating Unauthorized US Border Entry. *Inverge Journal of Social Sciences*, *3*(4), 82-94.

Badhan, I. A., Neeroj, M. H., & Rahman, S. (2024). Currency rate fluctuations and their impact on supply chain risk management: An empirical analysis. *International journal of business and management sciences*, *4*(10), 6-26.

Butt, S., & Yazdani, N. (2023). Implementation of Quality Management Practices and Firm's Innovation Performance: Mediation of Knowledge Creation Processes and Moderating role of Digital Transformation. Pakistan Journal of Humanities and Social Sciences, 11(4), 3881-3902.

Butt, S., Mubeen, I., & Ahmed, A. (2022). Corporate Social Responsibility and Firm Financial Performance: Moderating role of Ethical Leadership and Social Capital. JISR Management, Social Sciences & Economics, 20(1), 165-186.

Chaffey, D, & Ellis-Chadwick, F. (2019). *Digital marketing*. Pearson uk.

Chakraborti, J, Dutta, A, & Jana, B. (2022). An empirical investigation into why startups resist use of digital marketing. *Journal of Content, Community & Communication*, *15*(8), 69-83.

Dimitrova, P, & Sin, I. (2018). Digital Marketing in Start-Ups: The role of digital marketing in acquiring and maintaining business relationships.

Drzewiecki, J, & Olek, K. (2024). Impact of management toolbox on startups' strategy and business models–research results. *Procedia Computer Science*, *246*, 5565-5574.

Farazi, M. Z. R. (2024). Designing circular supply chains with digital technologies for competitive sustainability: An operation management perspective. *International Journal of Science and Research Archive*, *13*(1), 2346-2359.

Farazi, M. Z. R. (2024). Exploring The Role Of Artificial Intelligence In Managing Emerging Risks: An In-Depth Study Of Ai Applications In Financial Institutions'risk Frameworks. *The American Journal of Management and Economics Innovations*, *6*(10), 20-40.

Guo, F, & Hartini, H. (2023). Exploring the Coupling Relationship Between Dynamic Marketing Capability, Strategic Information Management and International Startup Performance. *Journal of Information Systems Engineering and Management*, *8*(3), 22875.

Hidayati, A, Susanti, E, Jamalong, A, Ginting, D, Suwanto, W, & Arifin, A. (2024). MARKETING ANALYTICS IN THE ERA OF DIGITAL-BASED MARKETING STRATEGY. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, *8*(1), 61-75.

Hodijah, C, Hendrayani, E, Tarigan, M, Suprianto, G, & Suryathi, W. (2024). THE MARKETING EFFECTIVENESS IN START-UP BUSINESS: A SYSTEMATIC LITERATURE REVIEW FROM 1973-2023. *Jurnal Riset Bisnis dan Manajemen*, *17*(2), 65-74.

Hokmabadi, H, Rezvani, S. M, & de Matos, C. A. (2024). Business Resilience for Small and Medium Enterprises and Startups by Digital Transformation and the Role of Marketing Capabilities—A Systematic Review. *Systems*, *12*(6), 220.

Hossain, A., Rasul, I., Akter, S., Eshra, S. A., & Turja, T. S. (2024). Exploring AI's Role in Business Analytics for Operational Efficiency: A Survey Across Manufacturing Sectors. *Journal of Business Insight and Innovation*, *3*(2), 1-17.

Ishfaq, U., Imran, A., Joseph, V., Haqdad, U., & Asif, M. (2022). Mediating role of trust between emotional intelligence and project team performance in telecommunication sector. *PalArch's Journal of Archaeology of Egypt/Egyptology*, *19*(4), 988-1005.

Jun, W. S, Yi, H. T, & Amenuvor, F. E. (2024). The effect of startup marketing agility on new product creativity and new product performance: the moderating effect of technological turbulence. *Marketing Intelligence & Planning*, *42*(8), 1494-1521.

Jun, W. S, Yi, H. T, & Amenuvor, F. E. (2024). The effect of startup marketing agility on new product creativity and new product performance: the moderating effect of technological turbulence. *Marketing Intelligence & Planning*, *42*(8), 1494-1521.

Kakolwa, L. (2023). *The Effect of Project Management Skills on the Performance of Startups in Tanzania* (Doctoral dissertation, Institute of Accountancy Arusha (IAA)).

Kandasamy, R, Ramesh, R, Kumar, R, Raghu, N, & Chavadi, C. A. (2025). Agile Methodologies in Digital Marketing for Growing Businesses. In *Expanding Operations Through Agile Principles and Sustainable Practices* (pp. 445-468). IGI Global Scientific Publishing.

Kislukhin, A. (2024). How to run marketing in startups efficiently?

Krishnamoorthy, V, Chandra, S, Rajesha, S, Bhattacharjee, S, Murugan, G, & Sampath, B. (2025). Emerging Startups in the Evolving Industry Landscape by Empowering Entrepreneur Growth: An Agile Marketing Practice. In *Digital Transformation Initiatives for Agile Marketing* (pp. 455-484). IGI Global.

Krivokuća, M, Bakator, M, Ćoćkalo, D, Vidas-Bubanja, M, Makitan, V, Djordjević, L, & Ugrinov, S. (2024). Data Mining Approaches in Predicting Entrepreneurial Intentions Based on Internet Marketing Applications. *Applied Sciences*, *14*(24), 11778.

Mumtaz, A., Munir, N., Mumtaz, R., Farooq, M., & Asif, M. (2023). Impact Of Psychological & Economic Factors On Investment Decision-Making In Pakistan Stock Exchange. *Journal of Positive School Psychology*, 130-135.

Narkiniemi, J. (2013). Using Digital Marketing to Develop a Modern Marketing Strategy for a Startup.: Case study: Design with Benefits.

Oklander, M, Oklander, T, Yashkina, O, Pedko, I, & Chaikovska, M. (2018). Analysis of technological innovations in digital marketing. *Восточно-Европейский журнал передовых технологий*, (5 (3)), 80-91.

Onasanya, A. E, Aroyewun, O, & Okonkwo, R. (2022). A Research Paper on Digital Marketing Effectiveness Analysis: A Project Focused on Analyzing the Effectiveness of Various Digital Marketing Strategies for Small Businesses Through Data Analytics, Helping Them to Allocate Their Marketing Budget More Effectively.

Permana, D. (2024). THE EFFECT OF DIGITAL MARKETING SKILLS AND MARKET RESEARCH ON MARKETING PERFORMANCE IN START-UP COMPANIES IN JAKARTA AND WEST JAVA, INDONESIA. *INTERNATIONAL JOURNAL OF ECONOMIC LITERATURE*, *2*(3), 954-970.

Rahman, M. M. (2024). Operational Efficiency in Start-up Tech Companies.

Rahman, S., Sayem, A., Alve, S. E., Islam, M. S., Islam, M. M., Ahmed, A., & Kamruzzaman, M. (2024). The role of AI, big data and predictive analytics in mitigating unemployment insurance fraud. *International Journal of Business Ecosystem & Strategy (2687-2293)*, *6*(4), 253-270.

Rizvanović, B, Zutshi, A, Grilo, A, & Nodehi, T. (2023). Linking the potentials of extended digital marketing impact and start-up growth: Developing a macro-dynamic framework of start-up growth drivers supported by digital marketing. *Technological Forecasting and Social Change*, *186*, 122128.

Rohm, A. J, Stefl, M, & Saint Clair, J. (2019). Time for a marketing curriculum overhaul: Developing a digital-first approach. *Journal of Marketing Education*, *41*(1), 47-59.

Sharabati, A. A. A, Ali, A. A. A, Allahham, M. I, Hussein, A. A, Alheet, A. F, & Mohammad, A. S. (2024). The Impact of Digital Marketing on the Performance of SMEs: An Analytical Study in Light of Modern Digital Transformations. *Sustainability*, *16*(19), 8667.

Stefia, C. M, Haryanto, B, Wahyudi, L, & Setiawan, A. I. (2024). The impact of dynamic marketing capabilities (DMCs) and strategic information management (SIM) on international start-up success: A meta narrative analysis. *Heliyon*, *10*(23).

Teberga, P. M. F, Oliva, F. L, & Kotabe, M. (2018). Risk analysis in introduction of new technologies by start-ups in the Brazilian market. *Management Decision*, *56*(1), 64-86.

Walizad, M. N. (2023). *The Impact of Digital Marketing Strategies on the Growth of SMEs (based on OÜ Partnerway)* (Doctoral dissertation, Private Higher Educational Establishment-Institute "Ukrainian-American Concordia University").

Ziakis, C, & Vlachopoulou, M. (2020, September). StUpGrowthPath: A Growth Hacking Marketing Approach for Digital Startups. In *Balkan Conference on Operational Research* (pp. 207-215). Cham: Springer International Publishing.