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Digital Marketing Capabilities and SME Performance in Oman's Logistics Industry: The Mediating Role of Crowdsourcing and Open Innovation

Faisal Ibrahim[1], Kamisah Supian[2], Amal Saleh Al Ubaidani[3], Fahad Al Abri[4], Wafa Al Hosni[5]

[1-5]Faculty of Business and Accountancy, Universiti Selangor (UNISEL), 40000, Selangor, Malaysia

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Corresponding Author:

Faisal Ibrahim
Omani9611@gmail.com
https://orcid.org/0009-0001-6693-0695

ABSTRACT

This study examines the impact of digital marketing capabilities on the business performance of small and medium-sized enterprises (SMEs) in Oman's logistics industry, with a specific focus on the mediating roles of crowdsourcing and open innovation. A quantitative research approach was used, involving data collection from 400 top management personnel through structured questionnaires. The responses were analyzed using Smart-PLS and structural equation modelling techniques. The results reveal that online community engagement has a significant positive impact on business performance while crowdsourcing and open innovation also contribute meaningfully to performance enhancement. Although digital marketing capability alone does not directly influence performance, it plays an enabling role by strengthening online community engagement. Mediation analysis confirms that online community engagement indirectly improves business performance through the mediating effects of crowdsourcing and open innovation. The study concludes that active online engagement and collaborative innovation are critical drivers of SME success in Oman's logistics sector. Practically, SMEs should prioritize building online communities and leveraging crowdsourcing over relying solely on digital marketing tools. Policymakers are encouraged to support these efforts by fostering digital infrastructure and innovation ecosystems.

Keywords: Digital Marketing, SME Performance, Logistics Industry, Crowdsourcing, Open Innovation, Online Community Engagement, Oman

1. INTRODUCTION

In the rapidly evolving global business environment, digital marketing capabilities have emerged as a critical driver of competitive advantage, particularly for Small and Medium Enterprises (SMEs) operating in dynamic sectors such as logistics (Kanda et al., 2019). Digital marketing capability, involves strategically using digital channels and technologies to engage customers and build relationships. This capability is increasingly recognized as an essential resource for improving business performance (Alqassabi, 2020). In parallel, the rise of online community engagement has transformed how businesses interact with customers, creating participatory platforms that foster loyalty, knowledge sharing, and co-creation of value (Zhang et al., 2020). This study focuses on logistics industry SMEs in Oman, investigating how digital marketing capabilities and online community engagement influence their business performance, particularly through the mediating roles of crowdsourcing and open innovation.

In Oman, logistics plays a crucial role in supporting the economy by facilitating the easy transportation of goods, strengthening supply chains, and enhancing international trade (Shukri & Ismail, 2023). Many SME sectors in Oman contribute to the country's efforts in job creation, aligning with Oman Vision 2040 (Al Ghunaimi et al., 2025). SMEs in logistics are crucial to the sector but face challenges, including limited resources, difficulties in adopting new technologies, and intense competition from numerous other companies (Prasanna et al., 2019; Gélinas & Bigras, 2004). However, AL-Shboul (2019) proposed that SMEs can address these challenges by applying digital marketing skills, which enables increased customer reach, customization of services, and greater operational flexibility. Similarly, Nizar & Matriano, (2022) stressed that online communities provide people with more opportunities to communicate, boosts customer interest, and encourages creative solutions from the entire group. Digital marketing and community engagement are crucial for SMEs, studies are starting to reveal that their full benefits can be realized when combined with modern approaches, such as crowdsourcing and open innovation. Businesses use crowdsourcing to gather new ideas and solve problems by inviting many stakeholders to participate (Larsson et al., 2019). According to Kanda et al. (2019), open innovation involves leveraging both internal and external knowledge to bring ideas to market more quickly and achieve a competitive edge. The two mechanisms have led to stronger innovation results and higher performance in diverse industries (Richard et al., 2019). There is limited research on the role of mediators in digital marketing and community websites within small logistics companies in Oman (Kant & Kanda, 2019).

Numerous studies indicate that effective digital marketing leads to improved business outcomes; however, few have explored the underlying mechanisms behind this phenomenon (Moradi et al., 2021). Additionally, there has been limited investigation into the roles of crowdsourcing and open innovation in facilitating value co-creation (Ober, 2022). While participation in online communities fosters customer engagement and generates new ideas (Flamini et al., 2022), there remains a lack of understanding regarding their effects on digital marketing capabilities and approaches to innovation management. Furthermore, little research has focused on small and medium-sized enterprises (SMEs) in countries such as Oman, making it challenging to assess their specific needs for effective policy and management decisions. Addressing this gap is crucial, as Oman's readiness for technology and its economic conditions could significantly influence the development of digital marketing and innovation.

To address these gaps, this study adopts a holistic approach by integrating digital marketing capability, online community engagement, crowdsourcing, and open innovation within a unified research framework to explain business performance among logistics industry SMEs in Oman. Unlike previous studies that often examine these variables in isolation, this research explores the interrelationships and mediating pathways, thereby providing deeper insights into the mechanisms through which digital marketing capability translates into competitive advantages. Moreover, focusing on Oman's logistics SMEs contributes to the literature by contextualizing theoretical constructs within a developing country setting, thereby enriching the understanding of digital marketing and innovation dynamics beyond Western-centric perspectives.

This study aims to investigate whether crowdsourcing and open innovation mediate the relationship between digital marketing capability and online community engagement and their impact on the business performance of logistics SMEs in Oman. It also seeks to assess the overall business performance of these SMEs, examine the effects of digital marketing capability and online community engagement on crowdsourcing and open innovation, and evaluate how these factors collectively influence business performance. This study makes several significant contributions.

First, it enhances the academic discussion by empirically demonstrating that crowdsourcing and open innovation play crucial roles in connecting digital marketing capabilities and online community engagement to business performance. This new insight enriches the innovation literature by emphasizing the collaborative and participatory aspects of digital marketing strategies within small and medium-sized enterprises (SMEs). Second, the research offers practical implications for managers and policymakers in Oman and similar emerging markets by identifying actionable strategies to improve SME performance through integrated digital marketing and innovation efforts. Lastly, this study addresses the need for context-specific research in digital marketing and innovation by providing evidence-based recommendations tailored to the logistics sector's unique features, such as its operational complexity and focus on customer service.

2. LITERATURE REVIEW

Improving firm performance through digital marketing skills (DMC) is now a vital concern in the business world (Zhang, 2022). DMC refers to a company's ability to effectively utilize digital tools and strategies to meet customer needs, create value, and maintain competitiveness (Brown, 2019). It has been recognized as essential for any small or medium-sized enterprise (SME) that aims to stay responsive and agile (Prasanna et al., 2019). Homburg and Wielgos (2022) suggested that strong digital marketing skills enable a firm to respond effectively to market demands, enhance brand visibility, and foster customer loyalty, ultimately leading to improved business outcomes. For SMEs, maximizing the use of digital tools is crucial due to their limited resources and size (Alemu et al., 2021). By leveraging digital marketing, SMEs can compete with larger companies by reaching a broader audience and tailoring their communication to address customer needs (Kapoor & Kapoor, 2021).

Digital marketing is becoming increasingly effective, making online community engagement even more crucial for fostering strong firm-customer relationships (Herhausen et al., 2020). Online community engagement (OCE) involves interacting with customers on social media, forums, and brand communities (Apasrawirote et al., 2022). Unlike regular marketing communication, online community engagement enables a two-way conversation where customers participate by sharing their views, discussing their experiences, and helping shape the offerings (Ibarra et al., 2020). Joining online conversations helps small and medium-sized enterprises form positive relationships with their clients, who in turn support their brand. When members of these online communities can actively participate, their happiness with the site and their loyalty increase (Varadarajan, 2020). Online community engagement (OCE) is recognized for its significant impact on marketing and for driving innovative ideas by leveraging the accumulated knowledge and networks of individuals within the community (Jankalová & Jankal, 2020).

Crowdsourcing combines digital marketing and community networking by enabling organizations to leverage a network of outside contributors' ideas and abilities (Khan, 2017). By collaborating with others, SMEs can enhance their innovation by gaining support and ideas from customers, partners, and stakeholders (Gregory et al., 2019). Empirical data indicate that relying on crowdsourcing can accelerate the innovation process, reduce development costs, and deliver products that better meet customers' needs (Nam & Kannan, 2020). SMEs find this especially helpful, as they often struggle to maintain their research and development (R&D) efforts (Martinez et al., 2018). Crowdsourcing enables digital marketing and engagement efforts to evolve into valuable innovations, directly linking market intelligence with the innovation process.

Similarly, open innovation refers to companies utilizing both inbound and outbound knowledge from various sources to create and sell products (Flamini et al., 2022). This approach motivates organizations to collaborate with external stakeholders, such as suppliers, customers, and research institutions, to promote faster innovation (Richard et al., 2019). As a result of open innovation strategies, SMEs experience improved innovation performance thanks to greater resource availability, faster product introduction, and fewer risks during new product development (Wiederhold, 2020). Small and medium-sized enterprises in emerging markets must leverage open innovation to connect with the world's knowledge and respond promptly to shifting local demands (Luo et al., 2020). Although open innovation has proven beneficial, its application in digital marketing and through active communities remains underexplored and warrants further investigation (Zhang et al., 2020).

Digital marketing, engaging online communities, crowdsourcing ideas, and open innovation collectively guide the growth and success of small and medium-sized enterprises (SMEs) in their respective fields (Al-Shuaili et al., 2019). As SMEs begin digital marketing, they establish their online presence and engage with customers. Open innovation enhances collaborative efforts by establishing formal relationships and sharing knowledge beyond the company, thereby encouraging the generation of new ideas (Nam & Kannan, 2020). By implementing integrated approaches, SMEs can enhance their ability to identify, absorb, and utilize knowledge from outside, which significantly supports their efforts to innovate (Mishra et al., 2020).

Although these constructs are known to be important, previous research seldom considers their role in business performance together (Al Mawli et al., 2021). In studies of SME research, the limited resources highlight the need for SMEs to integrate marketing and innovation strategies (Hamed, 2019). Much is known about digital marketing and open innovation connections in large companies from developed countries (Alraja et al., 2020). However, there has not yet been an extensive study of these links in small businesses in emerging countries (Al Farsi & Alattar, 2021). As a result, the number of research-based conclusions is limited, and the development of solutions tailored to regional needs is hindered since logistics plays a crucial role in diversifying Oman's economy (Al Buraiki & Khan, 2018). The conceptual model is shown in Figure 1.

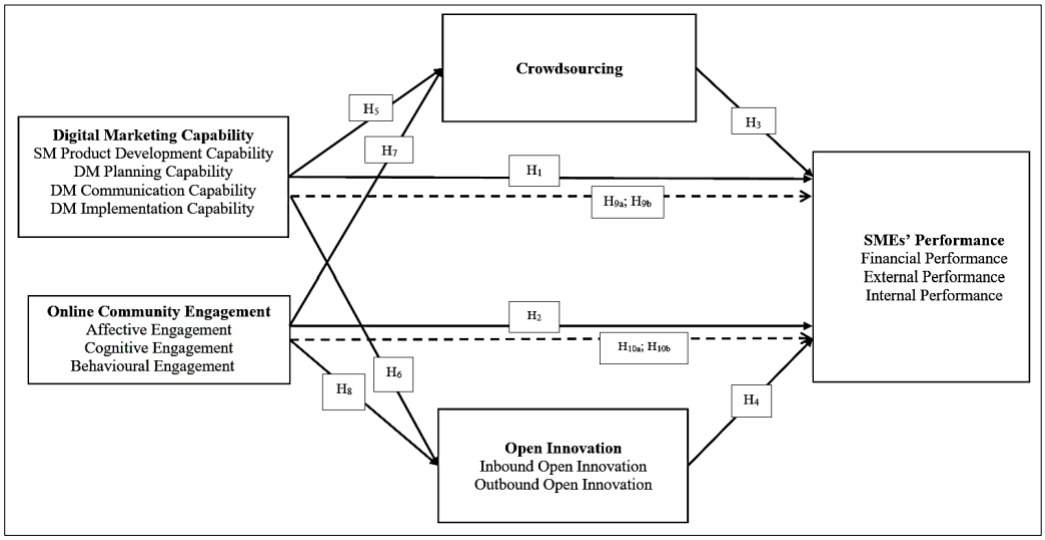

Figure 1: Conceptual Framework

3. METHODOLOGY

3.1 Research Design

This research employs an exploratory quantitative design to investigate the impact of digital marketing capabilities and online community engagement on the performance of SMEs in Oman's logistics industry, with a focus on the mediating roles of crowdsourcing and open innovation. This design is appropriate for uncovering how complex phenomena operate in under-researched contexts, enabling both the generation and testing of ideas. The quantitative approach enables the collection of precise numerical data that supports generalization and causal inference. Guided by a deductive approach, the study builds on established theories and validates them through empirical data. The use of a large and diverse sample enhances the relevance and applicability of the findings for both researchers and practitioners. The overall research study flowchart is shown in Figure 2.

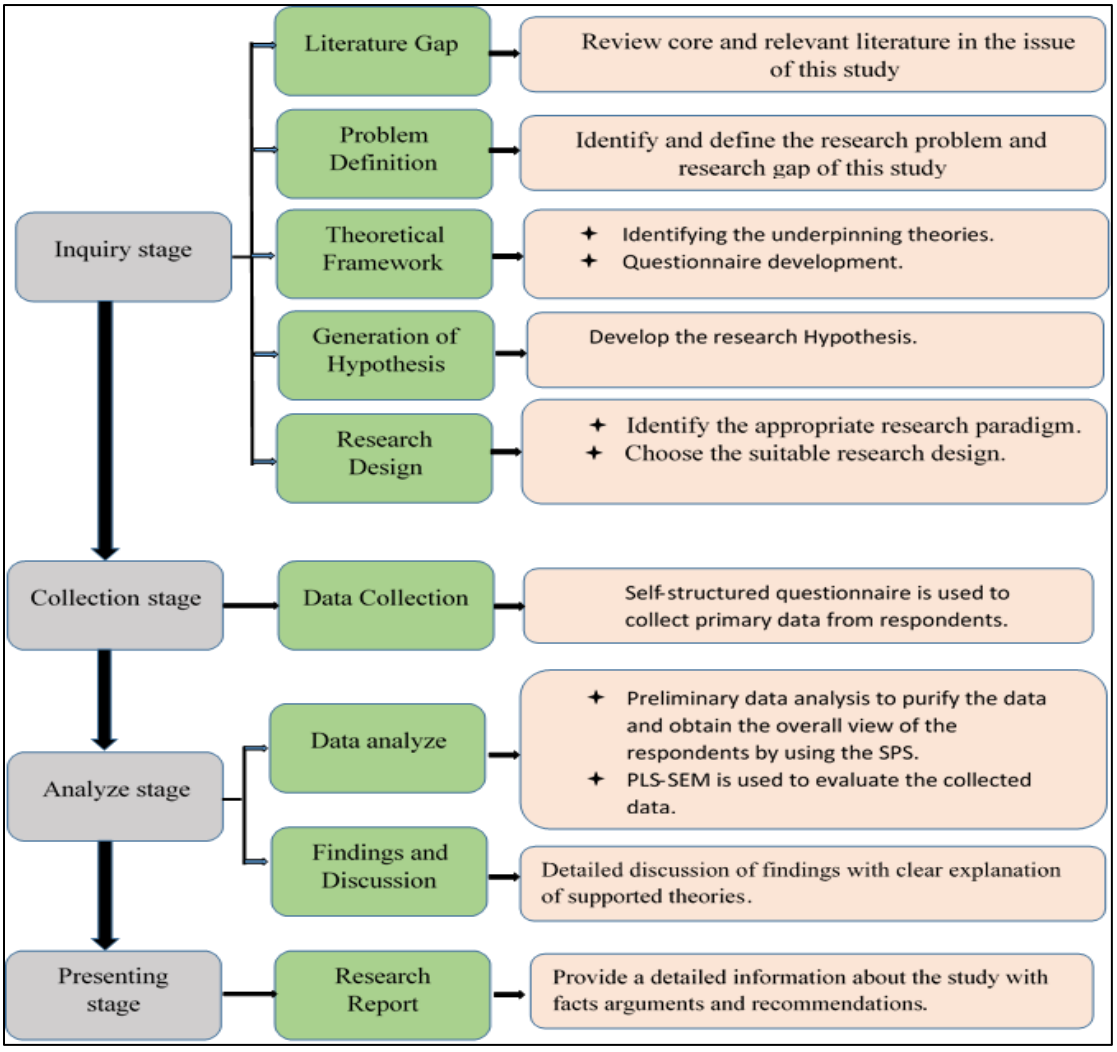

Figure 2: Research Process and Flowchart

3.2 Population and Sample

The target population of this research consists of top management personnel in SMEs operating within Oman's logistics sector, particularly those with substantial knowledge of and direct involvement in business operations. It includes owners, founders, Chief Executive Officers (CEOs), Chief Operating Officers (COOs), managers, and executives. According to the Public Authority for SME Development (Riyada), there are approximately 60,000 management-level personnel across over 31,000 registered small and medium-sized enterprises (SMEs) in the transport and logistics sector. Based on sample size recommendations for large populations, a minimum of 381 respondents was deemed sufficient to ensure the representativeness of the results. To reduce potential non-response bias, 400 questionnaires were distributed using purposive sampling, targeting individuals with the necessary qualifications and decision-making roles. This method ensured that respondents could provide informed and reliable insights on digital marketing, innovation, and business performance within the sector.

3.3 Data Collection Instruments

Data for this study were collected using a structured questionnaire developed from validated measurement scales identified through an extensive literature review. The constructs covered include digital marketing capability, online community engagement, crowdsourcing, open innovation, and business performance. To ensure content validity, the instrument underwent expert evaluation, followed by a pre-test and pilot study involving 30 SME managers in Muscat. Based on the feedback, revisions were made to refine the clarity and relevance of the items.

Data collection was conducted in two phases. In the first phase, the instrument was reviewed and tested with experts and a small sample to confirm reliability. In the second phase, the finalized questionnaire was distributed to the target respondents using Google Forms, enabling wide geographic reach and convenience. Prior to distribution, coordination with selected SMEs was established through phone calls and official email communications. The online survey method ensured uniform question delivery and preserved respondent anonymity.

To address common issues such as response bias and misinterpretation, the survey included clear instructions, and regular follow-up communication was maintained. A visual overview of the data collection process is provided in Figure 3.

The questionnaire was organized into five sections:

- Section A: Captures demographic data including gender, age group, educational background, job position, managerial experience, number of employees, years of business operation, and location.
- Section B: Measures the dependent variable—business performance—through three dimensions: financial performance, internal non-financial performance, and external non-financial performance (Zehir et al, 2016; Raymond and St-Pierre, 2013; Raymond et al, 2010; Lim et al, 2020).
- Sections C and D: Focus on the independent variables. Digital marketing capability is assessed across four sub-dimensions: social media product development capability, digital marketing planning capability, digital marketing communication capability, and digital marketing implementation capability. Online community engagement is evaluated through affective, cognitive, and behavioural engagement (Chahal and Kaur, 2014; Weerawardena, 2003; Tarsakoo and Charoensukmongkol, 2020; Vorhies and Morgan, 2025; Dessart, 2017; Dessart et al, 2016; Algharabat and Rana, 2021).

- Sections E and F: Examine the moderating variables, namely crowdsourcing and open innovation, measured through inbound and outbound innovation activities (Xu, 2015; Sisodiya et al, 2013; Cheng and Huizingh, 2024; de Andrés-Sánchez et al, 2022).

The complete questionnaire is included in Appendix A.

A total of 400 SMEs were invited to participate in the survey. Although the required minimum sample size was 381 respondents, a total of 384 completed responses were received, after data screening, 4 responses were excluded due to outlier issues, resulting in 381 usable surveys for data analysis. Additionally, ethical consideration were included and formal written consent were obtained from the university as well from the respondents.

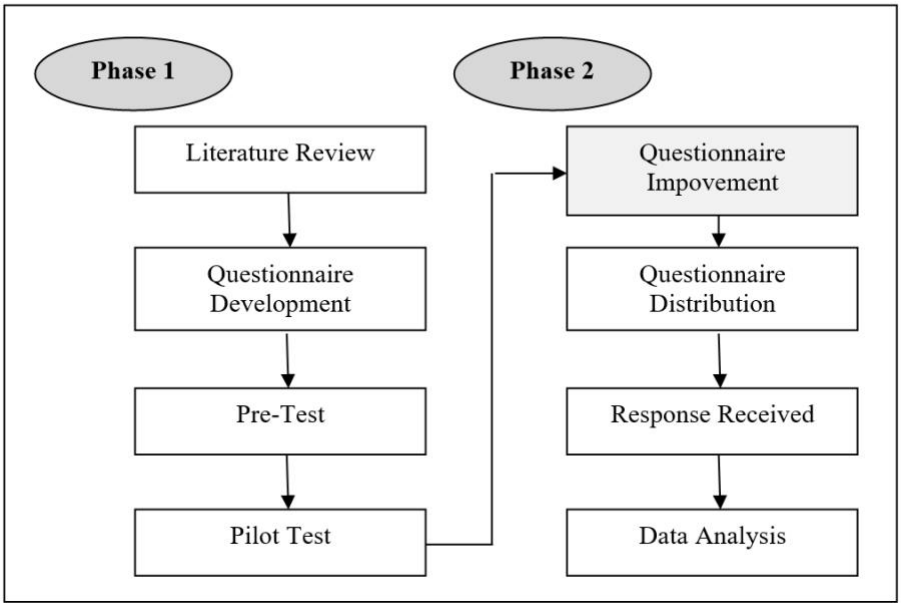

Figure 3: Data Collection Procedure

3.4 Data Analysis Techniques

Data were analyzed in two stages. First, the Statistical Package for the Social Sciences (SPSS, version 27) was used for data cleaning, screening, and testing reliability. It ensured data completeness, normality, and readiness for analysis. Next, Partial Least Squares Structural Equation Modelling (PLS-SEM) was applied to test the measurement and structural models, assess mediating effects, and validate the relationships among digital marketing capability, online community engagement, crowdsourcing, open innovation, and business performance.

4. RESULTS AND ANALYSIS

4.1 Demographic Profile

The demographic characteristics of the respondents shown in Table 1 revealed male participants (64.2%), reflecting social norms in Oman, while female respondents comprised 35.8%. Most participants fell within the 30–39 age group (34.7%), followed by those in the 40–49 age group (26.3%). In terms of

educational background, respondents were well-qualified, with the majority holding bachelor's degrees (29.7%), followed by master's degrees (25.5%), diplomas (25.3%), and PhDs (19.5%). Job positions were distributed across key leadership roles, including managers (27.1%), chief operating officers (26.6%), founders and CEOs (23.9%), and executives (22.4%). Most SMEs had been operating for less than 10 years (40.8%), while only 9.7% had been in operation for over 25 years, indicating a mix of emerging and mature firms.

Lastly, 44.2% of respondents worked in medium-sized enterprises (51–150 employees), 31.1% in small enterprises (10–50 employees), and 24.7% in micro-enterprises (fewer than 10 employees), underscoring the dominance of medium-sized firms in Oman's logistics industry.

Table 1: Demographic Profile of Respondents (N= 381)

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	245	64.2
	Female	136	35.8
Age Group	30–39 years	132	34.7
	40–49 years	100	26.3
	>50 years	59	15.5
Educational Qualification	Diploma	96	25.3
	Bachelor's Degree	113	29.7
	Master's Degree	97	25.5
	PhD	74	19.5
Job Position	Manager	103	27.1
	Chief Operating Officer (COO)	101	26.6
	Founder/Chief Executive Officer (CEO)	91	23.9
	Executive	86	22.4
Managerial Experience	<15 years	272	71.4
	16–20 years	70	18.4
	>21 years	39	10.3
Years of SME Operation	<10 years	156	40.8
	>25 years	37	9.7
Number of Employees	<10 employees (Micro)	94	24.7
	10–50 employees (Small)	119	31.1
	51–150 employees (Medium)	168	44.2

4.2 Descriptive Statistics

Table 2 presents the statistics, highlighting key aspects of the variables and providing valuable information about the digital marketing and business outcomes of Oman's SME logistics industry. According to the mean scores, Internal Non-Financial Performance and Digital Marketing Planning Capability are the areas to which SMEs give the most importance, suggesting they focus on strategic planning and being effective internally.

On the other hand, Crowdsourcing (3.60) and Behavioural Engagement (3.68) demonstrate relatively low means, indicating that customer participation and engagement are less prioritized. The values for standard deviations range from 0.65 to 0.85, indicating that answers varied significantly, and external Non-Financial Performance had the most significant difference in scores, followed by crowdsourcing. Generally, the study indicates that even though SMEs in Oman's logistics sector are aware of digital marketing, they could do more to benefit from crowdsourcing and engaging customers to improve their results.

Table 2: Descriptive Statistics

Variable	Mean	Std. Deviation
Financial Performance	3.85	0.72
Internal Non-Financial Performance	4.12	0.65
External Non-Financial Performance	3.78	0.81
Social Media Product Development Capability	3.95	0.68
Digital Marketing Planning Capability	4.05	0.74
Digital Marketing Communication Capability	3.88	0.69
Digital Marketing Implementation Capability	3.92	0.71
Affective Engagement	3.75	0.77
Cognitive Engagement	3.82	0.73
Behavioural Engagement	3.68	0.8
Crowdsourcing	3.6	0.85
Inbound Open Innovation	3.95	0.7
Outbound Open Innovation	3.72	0.78

Table 3 describes the findings of the Fornell–Lacker criterion assessment and the correlations between constructs is at the lower left triangle. Overall, the square roots of the AVE for the reflective constructs are 0.939 (affective engagement), 0898 (behavioural engagement), 0.909 (cognitive engagement), 0.900 (crowdsourcing), 0.929 (external non-financial performance), 0.883 (financial performance), 0.905 (internal non-financial performance), 0.862 (inbound open innovation), 0.917 (digital marketing communication capability), 0.929 (digital marketing implementation capability), 0.907 (digital marketing planning capability), 0.892 (outbound open innovation), and 0.891 (social media product development capability). These findings indicate that there exists a discriminant validity for the lower-order constructs.

Table 3: Fornell-Lacker Criterion Result for Lower-Order Constructs

	AE	BE	CE	CS	ENFP	FP	INFP	IOI	MCC	MIC	MPC	OOI	PDC
AE	**0.939**												
BE	0.881	**0.898**											
CE	0.637	0.859	**0.909**										

CS	0.711	0.762	0.842	**0.900**									
ENFP	0.864	0.823	0.653	0.600	**0.929**								
FP	0.645	0.771	0.741	0.766	0.658	**0.883**							
INFP	0.801	0.11	0.743	0.866	0.642	0.683	**0.905**						
IOI	0.779	0.686	0.814	0.801	0.737	0.706	0.672	**0.862**					
MCC	0.740	0.767	0.705	0.681	0.707	0.852	0.729	0.589	**0.917**				
MIC	0.761	0.651	0.611	0.813	0.631	0.762	0.633	0.782	0.594	**0.929**			
MPC	0.854	0.879	0.786	0.684	0.613	0.824	0.839	0.637	0.750	0.629	**0.907**		
OOI	0.775	0.704	0.721	0.844	0.646	0.705	0.781	0.728	0.872	0.621	0.618	**0.892**	
PDC	0.666	0.642	0.683	0.712	0.601	0.611	0.713	0.731	0.749	0.625	0.636	0.631	**0.891**

Note: FP denotes Financial Performance; INFP denotes Internal Non-financial Performance; ENFP denotes External Non-financial Performance; PDC denotes Social Media Product Development Capability; MPC denotes Digital Marketing Planning Capability; MCC denotes Digital Marketing Communication Capability; MIC denotes Digital Marketing Implementation Capability; AE denotes Affective Engagement; CE denotes Cognitive Engagement; BE denotes Behavioural Engagement; CS denotes Crowdsourcing; IOI denotes Inbound Open Innovation; OOI denotes Outbound Open Innovation

4.3 Measurement Model Results

Table 4 demonstrates the high measurement reliability, convergent validity, and proper item correlation, as indicated by Cronbach's Alpha (α), composite reliability (CR) values exceeding 0.7, and average variance extracted (AVE) values greater than 0.5. The scales of behavioral engagement (α=0.943, CR=0.977, AVE=0.932) and crowdsourcing (α=0.928, CR=0.963, AVE=0.901) work very well. At the same time, the lower results for digital marketing communication capability and open innovation (Inbound with CR=0.788, AVE=0.551, and Outbound with CR=0.773, AVE=0.533) indicate that these results provide a psychometric background for further analysis of the structural model and point out certain constructs that could benefit from closer attention in future research. The analysis confirms that these constructs are valid for evaluating the effects of digital marketing on the SME logistics sector in Oman.

Table 4: Reliability and Convergent Validity Analysis

Construct	Cronbach's Alpha (CA)	Composite Reliability (CR)	Average Variance Extracted (AVE)
Financial Performance	0.879	0.902	0.701
Internal Non-financial Performance	0.792	0.949	0.823
External Non-financial Performance	0.846	0.893	0.735
SM Product Development Capability	0.808	0.971	0.894
Digital Marketing Planning Capability	0.862	0.948	0.857
Digital Marketing Communication Capab.	0.845	0.846	0.647
Digital Marketing Implementation Capab.	0.877	0.921	0.801
Affective Engagement	0.878	0.91	0.773
Cognitive Engagement	0.888	0.925	0.809
Behavioural Engagement	0.943	0.977	0.932
Crowdsourcing	0.928	0.963	0.901
Inbound Open Innovation	0.828	0.788	0.551

Outbound Open Innovation	0.84	0.773	0.533

Table 5 shows that the ratios obtained from HTMT are below the conservative threshold of 0.85, indicating that every construct in the model is distinct from the others. Among all the relationships, the highest agreement is observed between cognitive engagement and outbound open innovation (0.844) and behavioural engagement and crowdsourcing (0.847), indicating a significant and clear link while maintaining discriminant validity.

Many digital marketing capability constructs are only moderately related to financial performance (FP) (with correlations ranging from 0.423 to 0.576), indicating that other variables may influence their relationship. The findings indicate that the structure of the measurement model is sound and suggest that the results in the structural model warrant further analysis. The results encourage us to proceed with assurance and test the proposed links between digital marketing activities and business results.

Table 5: Heterotrait-Monotrait Ratio (HTMT) Result for Lower-Order Constructs

	AE	BE	CE	CS	ENFP	FP	INFP	IOI	MCC	MIC	MPC	OOI	PDC
AE													
BE	0.741												
CE	0.778	0.798											
CS	0.709	0.847	0.832										
ENFP	0.820	0.782	0.788	0.694									
FP	0.753	0.786	0.825	0.826	0.753								
INFP	0.723	0.740	0.814	0.743	0.769	0.760							
IOI	0.794	0.827	0.768	0.832	0.822	0.764	0.755						
MCC	0.834	0.818	0.830	0.650	0.751	0.567	0.831	0.690					
MIC	0.822	0.831	0.787	0.619	0.769	0.558	0.643	0.773	0.664				
MPC	0.790	0.831	0.788	0.809	0.789	0.576	0.631	0.567	0.524	0.541			
OOI	0.754	0.722	0.844	0.810	0.726	0.423	0.656	0.604	0.568	0.556	0.582		
PDC	0.797	0.749	0.837	0.514	0.755	0.678	0.805	0.476	0.616	0.608	0.543	0.490	

Note: FP denotes Financial Performance; INFP denotes Internal Non-financial Performance; ENFP denotes External Non-financial Performance; PDC denotes Social Media Product Development Capability; MPC denotes Digital Marketing Planning Capability; MCC denotes Digital Marketing Communication Capability; MIC denotes Digital Marketing Implementation Capability; AE denotes Affective Engagement; CE denotes Cognitive Engagement; BE denotes Behavioural Engagement; CS denotes Crowdsourcing; IOI denotes Inbound Open Innovation; OOI denotes Outbound Open Innovation

4.4 Hypothesis Testing

Table 6 illustrates that digital engagement approaches are crucial to enhancing business performance for SMEs in the Omani logistics sector. BP is strongly influenced by online community engagement ($\beta = 0.788$, $p < 0.001$) and crowdsourcing ($\beta = 0.603$, $p < 0.001$). Open innovation (H4: $\beta = 0.311$, $p < 0.05$) demonstrates a statistically significant, albeit weaker, influence on industry innovation. Overall, Online community engagement leads to higher Crowdsourcing (H7: $\beta = 0.920$, $p < 0.001$) and Open Innovation (H8: $\beta = 0.801$, $p < 0.001$), indicating it is a key factor in these strategies. To sum up, the

direct impacts of Digital Marketing Capability on BP (H1) were not supported, nor were its direct impacts on Crowdsourcing (H5) and Open Innovation (H6). It stresses that, while digital tools are helpful, logistics SMEs achieve their best performance by staying involved with the community and collaborating with others.

Table 6: Path Coefficients of the Structural Model (Direct Effects)

Hypotheses	Path Coefficient	*t*-statistic	*p*-value
H_1: Digital Marketing Capability → BP	0.071	1.031	.303^{NS}
H_2: Online Community Engagement → BP	0.788	10.648	.000***
H_3: Crowdsourcing → BP	0.603	4.312	.000***
H_4: Open Innovation →BP	0.311	2.020	.043**
H_5: Digital Marketing Capability → Crowdsourcing	0.048	.0537	.591^{NS}
H_6: Digital Marketing Capability → Open Innovation	0.150	1.259	0.208^{NS}
H_7: Only. Community Engagement → Crowdsourcing	0.920	12.944	.000***
H_8: Only. Community Engagement → Open Innovation	0.801	7.742	.000***

Note: *** denotes significance at .001 level; ** denotes significance at .05 level; ^{NS} denotes not significant.

Table 7 shows that the results indicate that Online Community Engagement enhances Business Performance through two necessary mediating mechanisms: Crowdsourcing and Open Innovation (H10a, $\beta = 0.553$, $p < 0.01$ and H10b, $\beta = 0.249$, $p < 0.05$). Crowdsourcing, which accounts for the most significant part (roughly 70%) of Community Engagement's impact on performance, highlights the role of collaborating customers and suppliers in enhancing work performance. Similarly, the results did not indicate that Digital Marketing Capability indirectly affected higher-order marketing practices, suggesting it adds value by facilitating other activities rather than acting alone (H9a-H9b). These results indicate that SMEs need to improve their digital skills, but involving the community and leveraging that involvement for group innovation is what enables them to achieve the highest performance benefits. Researchers emphasize that the most significant benefit of digital transformation stems from carefully guiding engagement into co-creation and open innovation systems.

Table 7: Indirect Effects (Mediation) Results

Hypotheses	Indirect Effects	*t*-stat	*p*-value
H_{9a}: Digital Marketing Capability → Crowdsourcing → BP	0.025	0.522	.602^{NS}
H_{9b}: Digital Marketing Capability → Open Innovation → BP	0.042	1.055	.291^{NS}
H_{10a}: Only. Community Engagement → Crowdsourcing → BP	0.553	3.935	.010**
H_{10b}: Only. Community Engagement → Open Innovation → BP	0.249	1.925	0.044**

Note: *** denotes significance at .001 level; ** denotes significance at .05 level; ^{NS} denotes not significant.

4.5 Predictive Validity of Inner Model using PLS predict

Table 8 illustrates that PLS-Predict identified the model as effective in predicting important results. Business performance (BP) has the highest success rate in prediction ($Q^2 = 0.328$). The RMSE of the model (0.412) is also significantly lower than the benchmark (0.502), indicating that advancing digital marketing

aids in forecasting future business performance. Although crowdsourcing demonstrated the highest accuracy ($Q^2 = 0.297$), both Crowdsourcing and Open Innovation ($Q^2 = 0.281$) provided strong predictions. Open Innovation, however, could still be worked on for higher accuracy. The findings demonstrate that the approach is effective in enhancing SME success through the use of digital tools. These results align with the structural model, proving the significance of these approaches for Oman's logistics industry.

Table 8: PLS-Predict Results for Key Endogenous Variables

Construct	RMSE (Model)	RMSE (LM Benchmark)	Q^2 Predict	Prediction Accuracy
Business Performance (BP)	0.412	0.502	0.328	High
Crowdsourcing	0.376	0.441	0.297	High
Open Innovation	0.401	0.487	0.281	Medium-High

4.6 Discussion

This research examines the relationship between digital marketing and its impact on logistics companies in Oman, benefiting both academics and practitioners. Online engagement with customers has been shown to significantly enhance a company's business performance ($\beta = 0.788$, $p < 0.001$), a finding also emphasized in prior research on customer and stakeholder interactions (Al Qubtan & Gan, 2020). It demonstrates that involvement with customers promotes trust, loyalty, and teamwork —key aspects for SMEs operating in challenging markets. Likewise, crowdsourcing ($\beta = 0.603$, $p < 0.001$) and open innovation ($\beta = 0.311$, $p < 0.05$) significantly improve performance, aligning with findings that highlight collaborative innovation as a key factor in a company's success (Alemu et al., 2021). Still, having only digital marketing ability does not demonstrate a significant effect, in contrast to past research that examined similar topics (Al Maqbali et al., 2021), which emphasizes the importance of using digital marketing in conjunction with involving people.

A mediation reveals that online community engagement mainly impacts results through crowdsourcing and open innovation ($\beta = 0.553$, $p < 0.01$ for crowdsourcing and $\beta = 0.249$, $p < 0.05$ for open innovation). It is supported by the "engagement-innovation-performance" paradigm (Alqassabi, 2020) because such platforms help generate knowledge and foster innovation. Digital marketing capability, not commonly discussed in mediation research, acts more as an infrastructure builder than a key influencer of the performance, adding to the traditional theories. These insights are strongly supported by the model's high predictive accuracy ($Q^2 > 0.28$ for every endogenous construct) and the thorough validity tests (AVE > 0.5 for most constructs). The study results align with international studies on digital transformation for small and medium-sized enterprises (SMEs). However, they are also well-suited to the Omani logistics sector, which requires careful prioritization due to its limited resources and infrastructure.

4.7 Implications of the Study

This study offers both theoretical and practical contributions to the understanding of SME performance in the digital and innovation-driven landscape, particularly within Oman’s logistics sector. Theoretically, the study advances knowledge by integrating the Dynamic Capabilities View (DCV), Social Support Theory (SST), and Diffusion of Innovation Theory (DIT) to explain how SMEs manage innovation and utilize both internal capabilities and external engagement. The combination of SST and DIT provides

a clearer understanding of how firms that blend digital tools with collaborative strategies outperform competitors. While prior studies offered mixed findings on the link between dynamic capabilities and performance, this research confirms that context matters especially in emerging economies like Oman where digital marketing capability alone may not directly drive success due to varying economic and cultural conditions.

Practically, the findings highlight that performance improvements are more strongly tied to online community engagement, crowdsourcing, and open innovation than to digital infrastructure alone. SME managers are encouraged to build platforms for customer and partner collaboration, invest in training to foster engagement-driven innovation, and participate in open innovation networks. Support from policymakers in the form of funding and strategic guidance can help SMEs integrate these practices, ultimately contributing to Oman's vision of a digitally enabled economy.

5. CONCLUSION AND RECOMMENDATIONS

Digital marketing capabilities, crowdsourcing, and open innovation were investigated to understand their influence on the performance of SME logistics companies in Oman. The results emphasize that engaging the community through the internet is key to performance, as it influences crowd invention and open innovation. However, technological solutions alone were insufficient to make significant improvements, so combining them with interactive strategies is crucial. As a result, we are contributing to what emerging economies understand about digital transformation while validating the linkages between engagement, innovation, and performance that have not yet been examined globally. The study's strength is also due to the rigorous use of PLS-SEM and predictive validation methods.

Implications for both concepts and practices are explored in this study. It outlines how digital marketing helps SMEs grow when collaboration is involved. Practitioners take away a well-defined strategy: forming lively online communities, crowdsourcing innovation projects, and integrating beneficial open innovation. The insights provide policymakers with guidance on planning interventions to enhance the digital engagement and innovation capabilities of small businesses. It may be helpful for future work to investigate whether company size or the segment in which they operate affects these suggestions. Ultimately, this research helps fill important spaces in the literature and provides hard facts that local logistics SMEs can use to succeed in a digitized market.

6. LIMITATIONS AND FUTURE STUDIES

Despite its contributions, this study has several limitations. First, its cross-sectional design limits insights into how digital marketing capabilities influence performance over time. Second, the focus on logistics SMEs in Oman may restrict generalizability to other sectors or regions. Third, relying solely on manager-reported data may introduce bias; future research should incorporate objective performance metrics and perspectives from multiple stakeholders. Additionally, this study did not examine potential moderating factors such as firm size, digital maturity, or external environmental influences, which could enhance the model's explanatory power. Future studies should adopt mixed methods, broader samples, and comparative contexts to deepen understanding of digital transformation in SMEs.

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Ethical Statement: Ethical approval for data collection was obtained from Universiti Selangor, Malaysia. Formal written consent was also secured from the managers of the participating SMEs after clearly explaining the purpose of the study. No personal or sensitive information related to the respondents or their businesses is disclosed in this research. As this study forms part of a larger PhD project, only the relevant components approved for publication are included in this paper
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Declaration Statement of Generative AI: The authors declare that no generative AI tools were used in the creation of this study, except for language proofreading and polishing purposes only.

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Appendix 1.

1. Gender □ Male □ Female
2. Age Group □ 20 – 29 years □ 30 – 39 years □ 40 – 49 years □ 50 years and above
3. Educational Background □ Diploma □ Bachelor Degree □ Master Degree □ PhD
4. Position in the Company □ Founder / Chief Executive Officer □ Chief Operating Officer □ Manager □ Executive
5. Managerial Experience □ Less than 5 years □ 6 – 10 years □ 11 – 15 years □ 16 – 20 years □ 21 years and above
6. Number of Employees (Approximately) in the Company □ Less than 10 employees □ 11 to 50 employees □ 51 to 150 employees □ More than 150 employees
7. Years of Operating □ Less than 5 years □ 5 – 10 years □ 11 – 15 years □ 16 – 20 years □ 21 – 25 years □ More than 25 years
8. Location of Business Operation □ Muscat □ Port of Salalah □ Port of Duqm □ Sohar Port □ Freezone □Other (please specify:

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Financial Performance *Compared to the past 3 years, …*		**Scale**				
		1	**2**	**3**	**4**	**5**
FP1	my company has achieved financial success of new products.	1	2	3	4	5
FP2	the average net profitability compared to equity is increased.	1	2	3	4	5
FP3	net profitability before tax compared to all available resources is increased.	1	2	3	4	5
FP4	net revenue is achieved from basic operations.	1	2	3	4	5
FP5	the average annual sales is increased.	1	2	3	4	5
FP6	The overall success level in financial terms is increased.	1	2	3	4	5

Internal Non-Financial Performance		Scale				
		1	2	3	4	5
INFP1	I feel attached to my company.	1	2	3	4	5
INFP2	My company shares information well among employees.	1	2	3	4	5
INFP3	If defects are found in products/services, my company thoroughly analyses the defects to improve quality.	1	2	3	4	5
INFP4	Overall, I am satisfied with my company's non-financial performance.	1	2	3	4	5
INFP5	My company has mutual trust between departments.	1	2	3	4	5

External Non-Financial Performance		Scale				
		1	2	3	4	5
ENFP1	My company's customers are satisfied with our products/services.	1	2	3	4	5
ENFP2	My company's brand awareness and image are improving.	1	2	3	4	5
ENFP3	My company has high customer loyalty due to employee's honesty and fairness.	1	2	3	4	5
ENFP4	My company has an increasing number of customers.	1	2	3	4	5
ENFP5	My company has steadily secured new customers.	1	2	3	4	5

SECTION C: DIGITAL MARKETING CAPABILITY

Social Media Product Development Capability		Scale				
		1	2	3	4	5
PDC1	My company can speedily develop new product / service by using social media.	1	2	3	4	5
PDC2	My company can speedily introduce new product by using social media.	1	2	3	4	5
PDC3	My company manage overall new product development systems by using social media.	1	2	3	4	5
PDC4	My company successfully launch new products by using social media.	1	2	3	4	5
PDC5	My company can develop product/service responsively to customer needs by using social media.	1	2	3	4	5

Digital Marketing Planning Capability		Scale				
		1	**2**	**3**	**4**	**5**
MPC1	I have superior digital marketing planning skills.	1	2	3	4	5
MPC2	My company can set clear digital marketing goals.	1	2	3	4	5
MPC3	My company can develop creative digital marketing strategies.	1	2	3	4	5
MPC4	My company can segment and target market effectively using social media.	1	2	3	4	5
MPC5	My company have thorough digital marketing planning process.	1	2	3	4	5

Digital Marketing Communication Capability		Scale				
		1	**2**	**3**	**4**	**5**
MCC1	My company skilfully use social media for marketing communications programs.	1	2	3	4	5
MCC2	My company use digital marketing communication skills and processes well.	1	2	3	4	5
MCC3	My company effectively manage digital marketing communication programs.	1	2	3	4	5
MCC4	My company effectively manage corporate image and reputation by using social media.	1	2	3	4	5

Digital Marketing Implementation Capability		Scale				
		1	**2**	**3**	**4**	**5**
MIC1	My company can allocate digital marketing resources effectively.	1	2	3	4	5
MIC2	My company can effectively deliver digital marketing programs.	1	2	3	4	5
MIC3	My company can translate digital marketing strategies into action effectively.	1	2	3	4	5
MIC4	My company can quickly execute digital marketing strategies.	1	2	3	4	5
MIC5	My company can monitor digital marketing performance.	1	2	3	4	5

SECTION D: ONLINE COMMUNITY ENGAGEMENT

Affective Engagement		**Scale**				
		1	**2**	**3**	**4**	**5**
AE1	This community makes me feel enthusiastic.	1	2	3	4	5
AE2	This community makes me feel interested about their topics.	1	2	3	4	5
AE3	I find this community interesting.	1	2	3	4	5
AE4	This community makes me feel happy when I interact with them.	1	2	3	4	5
AE5	This community makes me feel pleasure when I interact with them.	1	2	3	4	5
AE6	Interacting with this community gives me a treat.	1	2	3	4	5

Cognitive Engagement		**Scale**				
		1	**2**	**3**	**4**	**5**
CE1	I devote a lot of time to thinking about this community.	1	2	3	4	5
CE2	I spend time thinking about this community.	1	2	3	4	5
CE3	While interacting with my community members, I usually forget everything else around me.	1	2	3	4	5
CE4	Time flies when I am interacting with my community.	1	2	3	4	5
CE5	When I am interacting with this community, I get carried away.	1	2	3	4	5
CE6	When interacting with my community, it is difficult to separate myself.	1	2	3	4	5

Behavioural Engagement		**Scale**				
		1	**2**	**3**	**4**	**5**
BE1	I share my thoughts with my community.	1	2	3	4	5
BE2	I share exciting content with my community.	1	2	3	4	5
BE3	I help my community.	1	2	3	4	5
BE4	I ask my community questions.	1	2	3	4	5
BE5	I pursue ideas or information from my community.	1	2	3	4	5
BE6	I ask for help from my community.	1	2	3	4	5
BE7	I endorse my community.	1	2	3	4	5
BE8	I ask other people to get involved with my community.	1	2	3	4	5
BE9	I strongly protect my community from its rivals.	1	2	3	4	5
BE10	I say positive things about my community to others.	1	2	3	4	5

SECTION E: CROWDSOURCING

Crowdsourcing		Scale				
		1	**2**	**3**	**4**	**5**
CS1	My company has introduced platforms to develop ideas about new products/services.	1	2	3	4	5
CS2	Customers can freely express their ideas about the introduction of new innovations in my company.	1	2	3	4	5
CS3	My company considers that a group of users can develop new ideas about new products/services or to improve the existing ones.	1	2	3	4	5
CS4	There are financial and non-financial incentives to develop the best ideas.	1	2	3	4	5
CS5	My company has evaluation systems to know the effectiveness of the ideas developed.	1	2	3	4	5
CS6	There are knowledge transfer systems to disseminate the best ideas.	1	2	3	4	5
CS7	My company uses virtual communities to develop new products or services.	1	2	3	4	5
CS8	New ideas take into account the stakeholders of the company.					

SECTION F: OPEN INNOVATION

Inbound Open Innovation		Scale				
		1	**2**	**3**	**4**	**5**
IOI1	My company constantly scan the external environment for inputs such as technology, information, ideas, and knowledge.	1	2	3	4	5
IOI2	My company actively seek external sources (e.g., research groups, universities, suppliers, customers, competitors, etc.) of knowledge and technology when developing new products.	1	2	3	4	5
IOI3	My company believe it is good to use external sources (e.g., research groups, universities, suppliers, customers, competitors) to complement our own R&D.	1	2	3	4	5
IOI4	My company often brings in externally developed knowledge and technology for use in conjunction with our own R&D.	1	2	3	4	5
IOI5	My company seek out technologies and patents from other firms, research groups, or universities.	1	2	3	4	5
IOI6	My company purchase external intellectual property for use in our own R&D.	1	2	3	4	5

Outbound Open Innovation		Scale				
		1	**2**	**3**	**4**	**5**
OOI1	My company often sell/give knowledge (patents, copyrights, and other outputs) to other firms to better benefit from innovation efforts.	1	2	3	4	5
OOI2	My company often offer agreements to other firms to better benefit from our innovation efforts.	1	2	3	4	5
OOI3	My company strengthens every possible use of rights to better benefit our firm.	1	2	3	4	5
OOI4	My company finds spin-offs that benefit better from our innovation efforts.	1	2	3	4	5
OOI5	My company innovation projects are less dependent on the contributions of external partners than on ours.	1	2	3	4	5