

Understanding Digital Inbound Marketing Adoption Using TOE Model

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ABSTRACT

Inbound marketing, with its focus on drawing customers in through engaging and relevant content, offers a compelling way to reduce acquisition costs while fostering loyalty. This study explores the factors driving inbound marketing adoption, employing the Technology-Organization-Environment (TOE) framework as a lens. Conducted in Algeria, the research gathered data from 117 companies representing a diverse range of 12 business sectors, with a particular emphasis on e-commerce. These responses, collected through convenience sampling, informed a structural equation model, analyzed using partial least squares structural equation modeling (PLS-SEM) in Smart PLS software, to test the study's hypotheses and evaluate the interplay between key factors. The findings reveal that perceived relative advantages, compatibility with existing practices, manageable complexity, top management support, competitive pressure, and customer demand all contribute positively to the adoption of inbound marketing strategies. Interestingly, despite the perceived affordability of implementation, a lack of in-house inbound marketing expertise emerged as a significant barrier to adoption among the surveyed Algerian companies. These insights offer valuable practical guidance for inbound marketing professionals, enabling them to optimize their strategies and address obstacles hindering wider adoption.

Keywords: Inbound marketing, digital, TOE model, technology.

1. INTRODUCTION

The digital revolution of recent decades has shifted the focus of customer engagement to the online sphere. Easy access to a wealth of information at any time has transformed the conversion process into a continuous cycle [1]. Inbound marketing, a strategy that attracts customers organically rather than through traditional outbound solicitation [2], has emerged as a key player in this shift. This is underscored by the significant increase in investment directed towards inbound marketing channels, contrasting sharply with the stagnant or slow growth observed in outbound channels.

Recent research, predominantly focused on Europe and the United States, has begun to explore the diverse applications of inbound marketing. Bueno and Gallego [3], for instance, investigated the use of inbound marketing to boost demand for postgraduate programs, implementing an action research methodology focused on a Master's program in Business Management at Spain's Pablo de Olavide University. This initiative generated over 1,000 visits and a conversion rate of 2.12%. Baranchenko and al. [4] analyzed the e-commerce landscape in Ukraine, highlighting regulatory gaps influencing consumer satisfaction and proposing inbound marketing tools to enhance online services, particularly within the infant nutrition sector. Erdman [5] conducted a six-year, multi-national study across 29 companies in the US and Europe, demonstrating the cost-effectiveness of inbound marketing within the food e-commerce sector and highlighting the importance of tailoring strategies to specific business types and geographic locations, with SEO and SEM proving particularly effective. Finally, Sánchez-Teba and al. [6] explored how inbound marketing can reshape customer relationships in the tourism sector, specifically on the Costa del Sol post-COVID-19, emphasizing the strategic use of non-intrusive communication and targeted content. Algeria's digital landscape presents a unique context for inbound marketing adoption. While internet penetration reached approximately 60.6% by January 2023, coupled with high social media usage, suggesting a growing awareness of digital marketing's potential, several challenges persist. Cultural hesitations surrounding online transactions and a lack of familiarity with digital tools often hinder adoption. Furthermore, the evolving regulatory framework for e-commerce creates uncertainty for businesses considering digital strategies.

The contemporary application of inbound marketing is intrinsically linked to technology [3-7-8], necessitating an examination of the theories underpinning its adoption and purpose. Technology facilitates two-way communication and fosters interactive engagement with customers [9]. While inbound marketing itself is not a technology, its implementation relies heavily on digital tools for content creation, delivery, and performance measurement across the customer lifecycle – attracting, converting, closing, and retaining [10]. The rise of mobile technologies, in particular, has fueled the growth of inbound marketing [11], enabling businesses to effectively showcase their brands and products online. Inbound marketing's emergence is rooted in the transformative impact of technology on the purchasing process [6] and consumer information consumption [12], emphasizing the need for consistent and relevant messaging.

Numerous theories address technology adoption, including the Theory of Planned Behavior [13], the Diffusion of Innovations Theory [14], and the Technology Acceptance Model [15]. The Technology-Organization-Environment (TOE) model, developed by Tornatzky and Fleischer [16], provides a comprehensive framework, considering technological, organizational (size, scope, resources), and environmental contexts [17]. The TOE model has been widely adopted in recent digital marketing research, including studies on digital marketing adoption by SMEs during the COVID-

19 pandemic [18], the intention to adopt social media by SMEs [19], and the factors driving social media marketing adoption by MSMEs in Nigeria [20]. Further applications include studies on online retail adoption in Vietnam [17], digital marketing use by Indian startups and SMEs [21], and social media impact on SME performance in Pakistan [22]. Even studies on broader technological adoption, such as the use of extensive data analytics for sustainable development goals [23], have utilized a TOE-based framework, demonstrating its versatility.

Given inbound marketing's reliance on technology and its integral role in digital marketing, this study adopts the TOE model to analyze its usage phase. While the TOE model's application to inbound marketing remains relatively unexplored, its relevance is supported by its extensive use in related digital marketing research. Existing inbound marketing research often focuses on theoretical frameworks. While a recent study investigated the intention to use inbound marketing tools during the COVID-19 pandemic using the Technology Acceptance Model (TAM) [24], focusing primarily on psychological factors like perceived usefulness and ease of use, our research employs the TOE model to explore both the intention to adopt and the actual implementation of inbound marketing within the specific Algerian context. This allows for consideration of factors such as competitive pressure and management support, recognized as essential for successful inbound marketing implementation.

While TAM remains a dominant model in technology adoption research, including organizational contexts [25], and has been applied to inbound marketing tools [24], its origins lie in individual-level adoption [24-26-27]. Theories like DOI and TOE are better suited for organizational-level analysis [25-28-29]. The TOE model's inclusion of the "environment" dimension offers a more holistic perspective than DOI, along with strong theoretical grounding, empirical support, and practical applicability [26]. Therefore, the TOE model, incorporating variables across technological, organizational, and environmental dimensions, provides a robust framework for investigating inbound marketing usage. Focusing on variables proven significant in prior research and relevant to the Algerian context, this study seeks to answer the following research question: **"To what extent do technological, organizational, and environmental factors influence the use of inbound marketing in Algerian firms?"**

2. LITERATURE AND HYPOTHESES

Having established the TOE model as the theoretical framework for this study of inbound marketing usage, we now define each element of the model and its constituent variables.

2.1 Technological factors

As noted by Zhu et al. [30], businesses must consider the implications of integrating new technologies, whether already implemented internally or available on the market.

Following Oliveira and Martins [26], this study focuses on four key technological factors: cost of adoption, relative advantage, compatibility, and complexity.

- *Adoption costs*

The literature on information systems and technologies consistently emphasizes the financial aspect, particularly costs and available resources, as influential variables in technology adoption [31]. Adoption is often contingent on the perceived value exceeding the cost [32], particularly when the investment promises cost reductions [33]. In this context, adoption cost refers to the perceived financial burden of implementing inbound marketing [34]. We hypothesize that higher perceived costs will negatively influence inbound marketing usage:

H1a: Inbound marketing adoption costs negatively impact its usage by businesses.

- *Relative advantages*

Rogers [14] defines relative advantage as the degree to which an innovation is perceived as superior to its predecessor. While distinct from the concept of perceived usefulness in the Technology Acceptance Model, the two are interconnected [35]. Relative advantage is a key driver of technology adoption across various contexts [34, 36, 37]. Here, relative advantage represents the perceived benefits of inbound marketing over outbound techniques. We hypothesize a positive relationship between perceived relative advantage and inbound marketing usage:

H1b: The relative advantages of inbound marketing positively impact its usage by businesses.

- *Compatibility*

Compatibility, also derived from Diffusion of Innovations Theory, is the degree to which an innovation aligns with existing values, experiences, and user needs [14], or, more recently, with existing operational methods [36]. It has been widely studied as a predictor of technology adoption [36-37-38], including in ICT [39-40-41], e-business [34], e-commerce [42], and m-commerce [36-43]. We hypothesize that compatibility will positively influence inbound marketing usage:

H1c: The compatibility of inbound marketing with existing practices positively impacts its usage by businesses.

- *Complexity*

Complexity, defined as the perceived difficulty of understanding and using an innovation [14], is widely recognized as a barrier to technology adoption [31-23-33]. Numerous studies have confirmed its negative influence [23-34-35-36]. In this study, complexity refers to the perceived difficulty of understanding and using inbound marketing. We hypothesize:

H1d: The complexity of inbound marketing negatively impacts its usage by businesses.

2.2 Organizational factors

Organizational factors represent internal assets that can influence technology usage, including fostering innovation [29]. This research focuses on two key organizational factors: top management support and employee expertise.

- *Top management support*

Top management support, reflecting the commitment of leadership to new technologies [36], is crucial for navigating change and has been identified as a significant factor in technology adoption [27-36-37-38]. We hypothesize that strong top management support will positively influence inbound marketing usage:

H2a: Top management support positively impacts inbound marketing usage by businesses.

- *Expertise*

Technological competence, encompassing the knowledge and skills of IT employees [37], is essential for successful technology adoption [39]. A lack of expertise can lead to resistance or reluctance to embrace new technologies [36]. A positive relationship between employee skills and technology adoption is widely supported in the literature [31-23-36-37-40]. In this study, expertise refers to employee skills related to inbound marketing. We hypothesize:

H2b: Employee expertise in inbound marketing positively impacts its usage by businesses.

2.3 Environmental factors

Environmental factors encompass external influences on technology adoption. This research focuses on competitive pressure and customer pressure.

- *Competitive pressure*

Competitive pressure is the perceived pressure from competitors within a specific sector [34]. In highly competitive environments, technology adoption can be a key driver of profitability [31], and companies often emulate competitors' technology choices [43]. The influence of competitive pressure on technology adoption has been demonstrated in various contexts, including information systems, e-business, e-commerce, social media, and e-CRM [40-43-44-45]. We hypothesize:

H3a: Competitive pressure positively impacts the use of inbound marketing by businesses.

- *Customer pressure*

Customer pressure reflects customer behavior and demands that compel companies to adopt new technologies to maintain satisfaction and retention [40-46]. Companies are

generally responsive to customer needs and expectations [47], and customer interest in a particular technology can drive adoption [48]. Empirical evidence supports the positive impact of customer pressure on technology adoption [41-47]. In this context, we hypothesize that customer interest in inbound marketing trends will positively influence its usage by businesses:

H3b: Customer pressure positively impacts the use of inbound marketing by businesses.

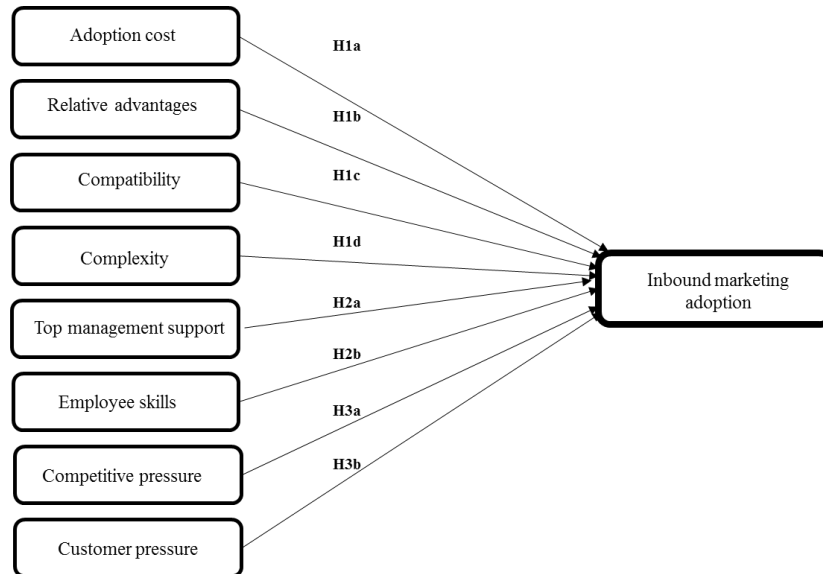


Figure 1. Conceptual model

3. RESEARCH METHOD

This study employed a quantitative research design using an online questionnaire to investigate the factors influencing inbound marketing adoption. Quantitative methods enable the generalization of findings and allow for projections regarding the evolution and relevance of a phenomenon [49]. The study targeted a sample of Algerian companies across various business sectors to test hypotheses related to the impact of technological, organizational, and environmental factors on inbound marketing adoption.

A preliminary version of the questionnaire was piloted with ten managers representing the target audience at a company trade fair held on February 25-26, 2023. Feedback primarily concerned questionnaire length. While acknowledging this concern and its potential impact on response rates, the number of questions was deemed necessary to adequately capture the model's variables. To mitigate this, the estimated completion time (approximately 10 minutes, based on pilot feedback) was clearly communicated in the questionnaire introduction.

Following revisions based on pilot feedback, the questionnaire was distributed via LinkedIn and email to over 500 senior marketers and digital marketers within Algerian organizations. This targeted approach ensured a sample well-positioned to provide informed insights into inbound marketing adoption at the organizational level. Data collection took place between April and October 2023, yielding 117 usable responses.

Data analysis was conducted using SmartPLS software, employing partial least squares structural equation modeling (PLS-SEM). All model constructs are reflective, and the items, derived from prior research, are detailed in the appendix.

4. RESULTS AND DISCUSSION

4.1 Sample characteristics

Table 1. Sample distribution by business sector

Sector	Frequency	%	Sector	Frequency	%
Industrial activity	12	10.26%	Banking/Insurance /Finance	7	5.98%
Communication / Marketing Agency	19	16.24%	Airline company	1	0.85%
E-commerce	30	25.64%	Training & Education	6	5.13%
Research & Consulting	8	6.84%	Transport & distribution	6	5.13%
healthcare	3	2.56%	Tourism	7	5.98%
Online services	3	2.56%	Technology	15	12.82%

The sample encompasses a diverse range of industries, spanning 12 distinct sectors. A notable concentration of respondents operates within the e-commerce sector, reflecting the inherent link between e-commerce platforms, digital technologies, and the strategic importance of inbound marketing.

Following a presentation of the sample's descriptive characteristics, the questionnaire variables are examined using descriptive statistics, including mean, standard deviation, kurtosis, and skewness.

Table 2. Descriptive statistics

Variable	Item	Mean	Deviation	Standardized	
				Kurtosis	Skewness
Adoption cost	AC_1	2.667	1.307	-1.312	-0.010
	AC_2	2.709	1.275	-1.210	-0.064
Relative advantages	RA_1	2.436	1.270	-0.902	0.272
	RA_2	2.521	1.369	-1.020	0.309
	RA_3	2.598	1.450	-1.160	0.304
Compatibility	Compat_1	2.684	1.454	-1.178	0.246
	Compat_2	2.667	1.462	-1.191	0.264
Complexity	Complex_1	2.538	1.350	-0.906	0.403
	Complex_2	2.983	1.414	-1.134	0.086
Top management support	Topmng_1	3.077	1.391	-1.079	-0.081
	Topmng_2	2.983	1.371	-1.069	0.031
Expertise	Expert_1	2.726	1.350	-1.029	0.237
	Expert_2	3.034	1.101	-0.740	0.360
Competitive pressure	Comp_1	3.085	1.258	-0.998	0.176
	Comp_2	3.111	1.345	-1.157	0.072
Customer pressure	Cust_1	3.744	1.760	-1.314	-0.183
	Cust_2	3.051	1.370	-1.111	0.048

While the mean and standard deviation provide fundamental descriptive insights, the skewness and normalized kurtosis coefficients offer a preliminary assessment of the distribution of responses and their proximity to a normal distribution. Values closer to zero indicate a greater resemblance to a normal distribution.

4.2 Common method bias

Given the use of a single questionnaire to collect data on all factors influencing inbound marketing usage, and the reliance on the same respondents for all measures, Harman's single-factor test was employed to assess common method bias (CMB). This involved conducting a factor analysis in SPSS.

As shown in the table below, the first factor explains less than 50% of the total variance (46.952%). This result suggests that common method bias is not a significant concern, and therefore, we can proceed with statistical testing.

Table 3. Harman's test

Component	Initial eigen values			Extraction sum of squares of selected factors		
	Total	% of variance	% Cumulated	Total	% of variance	% Cumulated
1	7,982	46,952	46,952	7,982	46,952	46,952
2	3,207	18,864	65,815			
3	1,952	11,485	77,300			
4	1,191	7,008	84,308			
5	,704	4,143	88,451			
6	,547	3,220	91,671			
7	,416	2,449	94,120			
8	,221	1,301	95,421			
9	,177	1,040	96,462			
10	,152	,894	97,356			
11	,130	,766	98,122			
12	,086	,503	98,625			
13	,072	,423	99,048			
14	,055	,324	99,372			
15	,047	,277	99,649			
16	,042	,245	99,894			
17	,018	,106	100,000			

4.3 Reliability and convergent validity

Reliability was assessed using Cronbach's alpha, the most commonly employed measure. However, acknowledging limitations of this metric, we also calculated composite reliability for a more robust evaluation. Convergent validity was assessed by

examining the Average Variance Extracted (AVE). All analyses were performed using SmartPLS 4.0.9.5 with 5,000 bootstrap samples. The results are summarized in the following table.

Table 4. Reliability and convergent validity

	Alpha Cronbach	Composite reliability	AVE
Relative advantage	0.951	0.955	0.911
Adoption costs	0.967	0.971	0.968
Customer pressure	0.914	0.916	0.921
Compatibility	0.988	0.988	0.988
Competitive pressure	0.774	0.775	0.815
Expertise	0.889	0.889	0.900
Complexity	0.733	0.744	0.788
Top management support	0.928	0.928	0.933

The preceding table demonstrates that all reflective measurements exhibit acceptable reliability, allowing us to proceed with the analysis with confidence.

Table 5. Correlations between constructs and the square root of AVE

	RA	AC	Cust	Compat	Comp	Expert	complex	Topmng
RA	0.954							
AC	0.102	0.984						
Cust	0.206	0.052	0.960					
Compat	0.829	0.085	0.324	0.994				
Comp	0.276	0.042	0.875	0.393	0.903			
Expert	0.289	0.126	0.683	0.392	0.818	0.949		
Complex	0.571	0.156	0.406	0.739	0.457	0.519	0.888	
Topmng	0.321	0.147	0.566	0.461	0.635	0.784	0.710	0.966

The square root of the AVE for each variable consistently exceeds its correlations with other variables. This indicates strong discriminant validity, confirming that each construct is distinct and measures a unique concept.

4.4 Hypothesis testing

To facilitate hypothesis testing, the results from the preceding analyses are consolidated in the following table.

Table 6. Hypothesis testing

	Coefficient	R ²	f ²	Q ²	Valeur t	Valeur p
RA -> Adoption	0.233		0.020		8.142	0.000*
AC -> Adoption	0.046		0.021		1.488	0.137
Cust -> Adoption	0.162		0.021		9.926	0.000*
Compat -> Adoption	0.196	0.352	0.025	0.166	13.028	0.000*
Comp -> Adoption	0.157		0.021		7.641	0.000*
Expert -> Adoption	0.147		0.020		1.520	0.129
Complex -> Adoption	0.159		0.040		9.800	0.000*
Topmng -> Adoption	0.186		0.021		9.697	0.000*

Note : *p<0.05

The results presented in the table above reveal the following regarding the tested hypotheses: Relative advantage ($p = 0.000 < 0.05$), compatibility ($p = 0.000 < 0.05$), complexity ($p = 0.000 < 0.05$), top management support ($p = 0.000 < 0.05$), competitive pressure ($p = 0.000 < 0.05$), and customer pressure ($p = 0.000 < 0.05$) all demonstrate a statistically significant relationship with inbound marketing usage. However, adoption cost ($p = 0.137 > 0.05$) and expertise ($p = 0.129 > 0.05$) do not exhibit a significant relationship.

The examined variables explain 35.2% of the variance in inbound marketing technology adoption. While adoption cost and expertise were not significant predictors, relative advantage, compatibility, top management support, complexity, competitive pressure, and customer pressure all significantly influenced inbound marketing usage. This suggests that perceived costs are not a major barrier to adoption, potentially due to the affordability of inbound marketing tools. The non-significant finding for expertise highlights a potential need for enhanced skills and training within the surveyed companies to effectively implement inbound marketing strategies.

The confirmation of H1d, regarding the negative impact of complexity, warrants further consideration. This finding, coupled with the non-significant result for expertise (H2b), suggests that the perceived complexity stems from both the required employee skills and the challenges of integrating inbound marketing into existing workflows. This points to potential ambiguities in implementing inbound marketing strategies within the specific operational context of Algerian companies and underscores the need for targeted training programs.

Several factors may contribute to these findings:

- **Study Context:** This research represents, to our knowledge, the first examination of inbound marketing usage in Algeria. Unlike studies in developed countries often leveraging Google Analytics data, this study applied the TOE model to a sample of Algerian companies due to the unavailability of such data, with managers considering inbound marketing statistics confidential.

- **Research Model:** The TOE model was selected for this study, providing a broader perspective compared to, for example, the Technology Acceptance Model (TAM) used in recent research [24] focusing on the post-COVID-19 context.
- **Company Size:** The sample includes both large companies and SMEs without differentiation in the analysis. Future research could explore potential differences between these groups.
- **Business Type:** The sample includes companies operating in both business-to-business (B2B) and business-to-consumer (B2C) markets, without distinguishing between them in the analysis. This represents another avenue for future research.

5. CONCLUSION

5.1 Theoretical contribution

Research on inbound marketing technology usage remains relatively scarce. This study addresses this gap by going further than mere adoption to explore actual usage, responding to the call for research extending beyond the geographically limited scope of previous studies [23]. Recognizing the influence of cultural and technological contexts on inbound marketing deployment [24-50], this research provides localized insights into the Algerian context. Employing the TOE framework, it reveals distinct drivers of technology adoption compared to developed markets. Furthermore, by incorporating the perspectives of senior digital marketers and managers, the study offers a nuanced understanding of organizational dynamics within a developing economy. This context-specific approach enriches existing knowledge and provides a foundation for future research in similar regions.

A key theoretical contribution is the application of the TOE model to the study of inbound marketing. While the literature suggests its suitability for analyzing technology usage at the organizational level, our findings raise questions about its explanatory power within the specific Algerian context.

5.2 Practical contributions

This study provides practical guidance for inbound marketing practitioners in Algeria, offering insights for developing and executing effective inbound strategies, particularly for enhancing e-commerce conversion rates. By investigating the influence of technological, organizational, and environmental factors through the TOE framework, it expands the understanding of inbound marketing usage beyond purely technological considerations.

The research offers actionable recommendations for managers. The non-significant finding for adoption cost suggests that perceived cost is not a major obstacle for the surveyed companies. Conversely, the non-significant result for expertise highlights the need for investment in employee training or recruitment of skilled professionals to

effectively leverage inbound marketing. This aligns with the significant negative impact of complexity, underscoring the importance of addressing skill gaps and integration challenges. The perceived difficulty of understanding and using inbound marketing, despite management support, emphasizes the need for targeted training and clearer implementation strategies.

5.3 Limitations

This study acknowledges certain limitations. As highlighted by Zhu et al. [30], the TOE model may benefit from incorporating cultural factors, which were not explicitly addressed in this research. Additionally, as indicated in previous research [51], the TOE model may show a bias towards radical innovations over incremental ones, a distinction not addressed in this study. Furthermore, the TOE model's explanatory power is inherently limited [23]. While it effectively captures certain aspects of technology adoption, it may not fully encompass the complex interplay of cultural and behavioral influences on organizational decision-making. Future research should explore these nuanced factors to provide a more comprehensive understanding of inbound marketing adoption and usage.

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APPENDIX

Model variable measurement scale

Constructs	Items	Source
Adoption cost	AC_1: The costs of adopting inbound marketing outweigh the benefits.	(Premkumar Roberts, 1999)
	AC_2: The amount of money and time invested in training employees to use inbound is high.	
Relative advantages	RA_1: Implementing inbound marketing increased our company's profitability.	(Premkumar Roberts, 1999)
	RA_2: Using inbound marketing gives us timely information on our prospects' journey.	
	RA_3: Inbound marketing allows us to reduce the cost of finding customers.	
Compatibility	Compat_1: The use of inbound marketing is compatible with most aspects of our company's work.	(Sophonthummapharn, 2009)
	Compat_2: The use of inbound marketing suits our company's working style.	
Complexity	Complex_1: The skills needed to use inbound marketing are too complicated for our employees.	(Premkumar Roberts, 1999)
	Complex_2: Integrating these technologies into our working practices is difficult.	

Constructs	Items	Source
Top management support	<p>Topmng_1: The business owner or manager enthusiastically supports the adoption of inbound marketing.</p> <p>Topmng_2: The business owner or manager has allocated adequate resources to adopt inbound marketing.</p>	(Premkumar & Roberts, 1999)
Expertise	<p>Expert_1: Our employees are familiar with inbound marketing.</p> <p>Expert_2: We have at least one employee who is an expert in inbound marketing.</p>	(Hung et al. 2010)
Competitive pressure	<p>Comp_1: We believe we will lose our consumers to the competition if we do not adopt inbound marketing.</p> <p>Comp_2: We believe it is a strategic necessity to use inbound marketing to compete in the marketplace.</p>	(Premkumar & Roberts, 1999)
Customer pressure	<p>Cust_1: Customer needs indicate the Company's requirement for inbound marketing.</p> <p>Cust_2: Consumer behavior indicates a company's requirement for inbound marketing.</p>	(Sophonthummapharn, 2009)