

Title

Marketing Agility during Deep Uncertainty Using a Sensemaking Perspective: The Performance Influence of Digitization and Government Intervention in Retail Healthcare

Abstract

Purpose: Community pharmacies are critical healthcare providers facing unprecedented trading conditions during deep uncertainty. As such, this study aims to inform scholars and practitioners about the efficiency of marketing agility in enhancing firm performance while considering the mediating roles of government interventions and digitization.

Methodology: A conceptual framework is constructed and validated. Six hypotheses are tested using partial least squares structural equation modeling (PLS-SEM), with 254 responses attained via a questionnaire.

Findings: Marketing agility facilitated firm performance and digitization. However, findings elucidate the impact of government involvement and underscore the necessity for re-evaluating conventional metrics for firm performance amid deep uncertainty.

Originality: The efficacy of marketing agility has been acknowledged amidst deep uncertainty, yet more research is needed within the retail healthcare sector. This research addresses this gap.

Keywords

Marketing agility, sensemaking, government interventions, healthcare, quantitative research

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Introduction

The global public health crisis of COVID-19 particularly impacted retail stores, with social and mandated measures resulting in retailers facing unprecedented changes in supply and demand (Ferraro *et al.*, 2022). Certain retail categories in some countries, such as Australia, the primary country of focus, had high degrees of government intervention. Australian community pharmacies (henceforth *pharmacies*) were one such sector, with government increasing market interventions such as limiting the supply of some products and restricting the number of customers permitted in pharmacies (Parajuli *et al.*, 2022). Australia has over 4,100 pharmacies that are allied health providers and are mainly small, privately owned retailers (Richardson, 2023). COVID-19 hurt many small businesses, and understanding how to improve business continuity of pharmacies is crucial as pharmacies provide essential healthcare services and contribute significantly to the economy (Richardson, 2023, Roloff, 2023). In early COVID-19, The Pharmacy Guild of Australia (2020, p. 11) discussed pharmacies and noted, “Sustainability and avoidance of bankruptcy will be our single largest challenge ...” Understanding influences on pharmacy performance in deep uncertainty is thus significant and is an aim of this research.

In deep uncertainty, an unprecedented environment that threatens firm continuation, small businesses adapt to prioritize survival, with financial measures often defining the success or failure of mitigations (Katare *et al.*, 2021, Walker *et al.*, 2010). As such, firm performance relates to financial measures like cash flow that small business owners deem imperative to survival (Jarvis *et al.*, 2000). Marketing and agility are contributors to firm performance that may facilitate business survival (Ferraro *et al.*, 2022, Prayag *et al.*, 2024), while marketing agility (MA) has been shown to benefit firm performance in lower levels of uncertainty (e.g. Khan (2020), Zhou *et al.* (2019)). MA is marketing decisions and actions undertaken with agile principles, such as iteration and speed, in response to threats or

opportunities (Kalaignanam *et al.*, 2021). MA is a relatively new field of study, with further MA studies needed to inform businesses about impacts on firm performance in deep uncertainty (Eckstein *et al.*, 2023).

Furthermore, pharmacies are increasingly digitizing, and MA facilitates digitization, with digitization leading to performance benefits (Gicic *et al.*, 2022, Thourrunroje and Racela, 2022, Troise *et al.*, 2022). Digitization is using information technology for process automation, and the recent pandemic of COVID-19 saw large-scale digitization, including in pharmacies and healthcare, in which digitization is deemed a government priority in many countries (Gobble, 2018, Parajuli *et al.*, 2022). For example, electronic prescriptions were widely adopted in COVID-19, facilitating further digitization such as telehealth and online shopping: A customer could attend a doctor's appointment via telephone or video software. The prescription could be sent electronically to a pharmacy, and the medication ordered then delivered to the customer. Hence, government's social distancing requirements were facilitated by digitization with reduced doctor and pharmacy transmission risk via limited direct customer contact.

In addressing the MA literature gap and the need for further pharmacy performance understanding, this study employs the perspectives of sensemaking theory. Sensemaking is the social process whereby individuals and groups form plausible understandings to inform action in uncertainty (Weick *et al.*, 2005). Sensemaking is valuable in health and management-related deep uncertainty studies ((Christianson and Barton, 2021, Eckstein *et al.*, 2024).

As such, this study is investigating the following three research questions:

RQ1: What is the impact of marketing agility on firm performance in deep uncertainty?

RQ2: In what ways does digitization facilitate firm performance?

RQ3: What impact does government intervention have on firm performance and digitization?

This research contributes to theory in numerous ways. First, MA needs further quantitative studies that measure firm performance outcomes (Asseraf *et al.*, 2019), particularly in deep uncertainty. We thus add to the understanding of how MA may lead to superior firm performance. Second, government intervention in the pharmacy sector was evident, and we study the government's role during deep uncertainty. Finally, the sensemaking perspective in healthcare requires theoretical advancement (Christianson and Barton, 2021), and this study contributes to the growing body of literature on sensemaking.

This study progresses as follows. Next, theoretical development resulting in hypotheses is presented. Then, methods, including measurement adopted in this study, are outlined. Results are then exhibited using structural equation modeling (SEM). Finally, we discuss findings and theoretical and practical implications, including future research opportunities and limitations.

Theoretical Background and Hypotheses

This study's primary theoretical perspectives and contexts are sensemaking, MA, digitization, pharmacies, and government. As a precursor to discussing theory and developing hypotheses, a brief introduction to related MA literature is provided in Table I and discussed next.

Table I

Examples of MA literature relevant to this study

Study	Similar topics	Description	Relevancy
Arslan <i>et al.</i> (2024)	Deep uncertainty, small business owners	Sixteen in-depth interviews with entrepreneurs.	Business survival is more of a concern than profitability, speed of adaptation of marketing provides advantage.
Eckstein <i>et al.</i> (2023)	Sensemaking, VUCA, Firm performance	Systematic literature review of 27 MA articles.	Emphasises the need for more MA research, including quantitative studies measuring

			performance.
Moi and Cabiddu (2022)	Deep uncertainty	In-depth interviews with 16 B2B firms in COVID-19.	Organisations faced significant and sudden operational changes in early deep uncertainty.
Thoumrungroje and Racela (2022)	Digitisation, small business, VUCA	SEM assessment of 162 exporters.	MA leads to increased acceptance of, adaptability to, and benefits of digitization.
Kalaiganam et al. (2021)	Sensemaking, VUCA	A conceptualization of MA published during COVID-19	Likely the first to conceptualize Weick's sensemaking as a MA construct.
Zhou et al. (2019)	Firm performance, VUCA	A SEM analysis of 518 food processing companies.	Measure MA performance using financial metrics. Findings include that MA most likely results in superior financial performance in low/medium levels of VUCA.

The volatile, uncertain, complex, and ambiguous (VUCA) studies consider less impactful environments than deep uncertainty, which benefits from a sensemaking perspective.

Furthermore, quantitative measurement of firm performance is needed, yet few studies measure performance (Eckstein *et al.*, 2023). Finally, we did not find MA research measuring the impact of government interventions, an important perspective (Stiglitz, 2021), while the MA impact on digitization appears beneficial, yet under-explored (Thoumrungroje and Racela, 2022).

Sensemaking

COVID-19 resulted in level 4 deep uncertainty where mitigations and future outcomes are unknown, threatening firm survival (Walker *et al.*, 2010). This contrasts with the more predictable and less impactful VUCA as understood in this study. Sensemaking theory is widely adopted in business research considering deep uncertainty (Eckstein *et al.*, 2024). Sensemaking is a reactive organizing process whereby individuals and groups notice, create understandings, and act (Weick *et al.*, 2005). Learnings from actions then inform future sensemaking. Sensemaking is social in that actors communicate to form plausible shared understandings of the ongoing unknown. Furthermore, action enacts an environment, which is a new operating environment created by the actions taken; further sensemaking may then be required to address the enacted environment and changes to the external environment

(Weick, 2005). Hence, speed to action favors plausibility over accuracy, and an iterative approach is preferable so that the organization may learn retrospectively (Weick, 1988, Weick *et al.*, 2005). Significantly, inaction may be the chosen action, and actions may exasperate a situation (Weick, 1988).

Sensemaking is a valuable framework for investigating healthcare, small business, and the retail sector in deep uncertainty (Eckstein *et al.*, 2024). However, recent events have accentuated the need for further sensemaking studies considering large-scale deep uncertainty (Christianson and Barton, 2021). As sensemaking is a perspective in recent MA studies (Eckstein *et al.*, 2023), we highlight the overarching role of sensemaking as we discuss further theoretical lenses.

Marketing Agility and Firm Performance

MA is an understudied dynamic capability that integrates marketing with agile capabilities (Asseraf *et al.*, 2019). Marketing combines strategic decisions such as segmentation, targeting, differentiation, and positioning with strategy implementation via marketing mix activities (Mirzaei *et al.*, 2018). Agile is the emphasis on speed of delivery, flexibility, collaboration, and customer engagement (Sommer, 2019).

Kalaignanam *et al.* (2021) described MA as comprising sensemaking, speed, iteration, and marketing decisions; following identifying and classifying an environmental change, marketing decisions are made, and resulting actions taken. Quick sensemaking and marketing decisions are encouraged, often with incomplete information (Moi and Cabiddu, 2022). MA thus requires flexibility in adapting to VUCA (Khan, 2020), with marketing becoming ad-hoc with less emphasis on strategy and planning in deep uncertainty (Moi and Cabiddu, 2022).

MA is seldom studied in the retail small business context (Eckstein *et al.*, 2023), yet pharmacies are predominantly small and owner-operated (Richardson, 2023). This is relevant

as marketing in small businesses seldom receives owners' and managers' attention and is frequently misunderstood as synonymous with promotion (Mirzaei *et al.*, 2018). Yet, marketing is integrated into retail (Gielens and Roggeveen, 2023), such as awareness of where a pharmacy may trade (*place* in the marketing mix) and how products may be promoted (Department of Health and Aged Care, 2022, Queensland Health, 2021). As such, we posit that pharmacies perform marketing activities, even if unknowingly.

MA positively influences firm performance in varying industries and situations in VUCA (Asseraf *et al.*, 2019, Zhou *et al.*, 2019). Firm performance is particularly important in deep uncertainty for survival of organizations (Katara *et al.*, 2021). Yet MA literature has measured firm performance in VUCA but not deep uncertainty. The impact of MA on performance in deep uncertainty is thus unknown. As such, we hypothesize that:

H1: In deep uncertainty, marketing agility positively influences firm performance.

The Mediating Role of Digitization

Digitization is converting manual systems, such as paper-based processes, to digital workflows (Gobble, 2018). Digitization is a critical function of digital health and is a government priority (Australian Digital Health Agency, 2023). Pharmacy digitization constitutes many technologies and processes such as online sales websites, electronic scripting (eScripts), online advertising, and customer communication using social media such as Facebook. Prior MA research has found that in small businesses, MA promotes digital technology adoption (Thoumrunroje and Racela, 2022), thus we posit:

H2: Marketing agility positively influences digitization.

Digitization may deliver benefits such as reducing errors, presenting efficiencies, enabling adjustment to changing trading environments, and advancing agility (Amankwah-Amoah *et al.*, 2021, Prayag *et al.*, 2024, Troise *et al.*, 2022). These benefits have shown to

lead to improved business performance and continuity in many business types and sizes, for example, small business (Al-Omush *et al.*, 2023), retail (Williams, 2014), and pharmacy (Peltoniemi *et al.*, 2021). However, digitization does not assure performance gains, and other factors such as planning and training may contribute to the success or failure of digitization (Al-Omush *et al.*, 2023, Tsou and Chen, 2023). For business survival, organizations during COVID-19 needed to implement digitization in haste and potentially without consideration of critical success factors such as adequate planning (Amankwah-Amoah *et al.*, 2021). Albeit pharmacies may have implemented or expanded digitization without factors often deemed necessary for digitization success, we hypothesize that:

H3: Digitization positively influences firm performance.

Troise *et al.* (2022) found that digitization facilitates agility toward performance. Further, following the logic of prior hypotheses that MA positively influences performance and digitization, and digitization leads to firm performance:

H4: Digitization mediates the influence of marketing agility on firm performance.

The Moderating Role of Government Intervention

The Australian government acts in the public interest by setting objectives aligned with the World Health Organization health system performance assessment framework and intervenes to meet those objectives (Calder *et al.*, 2019, Pharmacy Board of Australia, 2019). A mixed public and private healthcare system is employed, with pharmacies being predominantly private businesses in a heavily regulated industry (Richardson, 2023). Interventions, for example, include controls on promotion to minimize medical misinformation dissemination, the number of stores owned by an entity being restricted, and a registered pharmacist must be in the store at all opening hours (Department of Health and Aged Care, 2022, Queensland Health, 2021).

Due to health objectives, government has an interest in a successful pharmacy industry. Thus, pharmacy directives were expanded during COVID-19. For example, restricting the number of customers in-store was mandated, and sales of some medications were limited (Gicic *et al.*, 2022). Yet pharmacies were permitted to trade when other businesses could not, and financial aid was provided when delivering medications to customer premises (Parajuli *et al.*, 2022). Therefore, Government intervention was higher in COVID-19, while pharmacies had positive performance (Richardson, 2023). Hence:

H5: Government intervention positively moderates the effects of marketing agility on firm performance

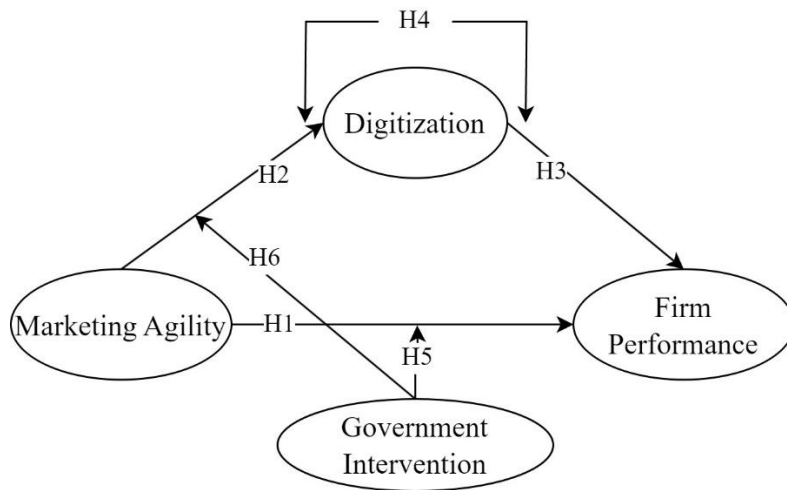
Furthermore, government requirements supported pharmacies in digitizing during COVID-19. For example, eScripting take-up increased significantly as customer contact was discouraged, and digital check-in apps were introduced (Gicic *et al.*, 2022, Parajuli *et al.*, 2022). Hence:

H6: Government intervention positively moderates the effects of marketing agility on digitization

In summary, this study explores the impact of MA on firm performance in deep uncertainty that requires sensemaking. The influence of digitization and government intervention are considered (Figure 1).

Figure 1.

Conceptual research model of this study



Methods

Sample and Data Collection

Our sample population included English speakers who worked in a pharmacy during COVID-19 and are over 17 years of age. Following [university name] ethics approval, data were collected in January and February 2024 using a LimeSurvey (Limesurvey GmbH., 2024) online questionnaire. Pre and pilot testing was conducted with 23 respondents. Amendments were made based on feedback relating to questionnaire length and clarity following pre-testing with three people. For all constructs, pilot testing showed Cronbach’s alpha and rho_a scales between 0.7 and 0.95, indicating likely internal consistency reliability (Hair *et al.*, 2021).

Participants were recruited through purposeful and convenience sampling. The two strategies involved contacting potential respondents directly and posting requests for participants in Facebook Groups, a recruitment method used in studies like Nekomahmud *et al.* (2022) and Wong *et al.* (2023). The Facebook Groups, such as ‘Locum Pharmacists – Sunshine Coast’, were industry-specific.

Our final sample of 254 tops the median of 195 in MA studies (Eckstein *et al.*, 2023).

Furthermore, the sample size exceeds the minimum required using the inverse square root

method: By assuming power of 0.8, significance levels of 1%/5%/10%, and Cohen's effect size calculated as 0.501, the required sample size was 164/100/74 per G*Power software (Cohen, 1992, Faul *et al.*, 2007, Kock and Hadaya, 2018, Legate *et al.*, 2023).

The majority of respondents (157) worked in Australia, followed by New Zealand (82), the U.S.A. (6), South Africa (3), Canada (2), India (1), Ireland (1), Pakistan (1), and the U.K. (1). Due to the high proportion of Australian respondents, this study employs a primarily Australian perspective. One hundred seventy-seven (70%) worked in urban areas, and 134 (53%) operated as a part of a group, as opposed to independent pharmacies.

Measurement

Appendix A shows the survey instrument, comprising quantitative and qualitative questions/answers. Answers were required for all questions except for free-text (qualitative) fields. Two hundred thirty (91%) responses included some text-format qualitative responses.

When designing scales, Nunkoo *et al.* (2021) recommended minimizing the data required while capturing necessary aspects of the constructs. As such, we selected to use reflective measurement where the indicator is the consequence of the construct (Legate *et al.*, 2023). To enhance validity and reliability, we used multi-item indicators for each construct and adapted existing questions to meet the needs of this study (Diamantopoulos *et al.*, 2012, Nunkoo *et al.*, 2021). Furthermore, participants were required to answer a simple calculation to view the survey to minimize the possibility of unwanted responses, such as bots.

To reduce common method variance (CMV) bias, we strengthened our measurement instrument design. We provided clear instructions, communicated to participants that anonymity and confidentiality would be ensured, that there were no preferred or correct answers, and used grammatically proper and straightforward wording. In addition, questions to be analyzed quantitatively were of the 'closed' question type, with a 7-point Likert scale

from 1 = strongly disagree to 7 = strongly used (Diamantopoulos *et al.*, 2012, Podsakoff *et al.*, 2003).

The final instrument comprised 24 questions. General questions required participants to identify the country where they worked during COVID-19, if they worked in an independent pharmacy, and if they worked in urban areas. The seven MA questions were adapted from Akter *et al.* (2022), Saputra *et al.* (2022), Zhou *et al.* (2019). Digitization, Government Intervention, and Firm Performance each comprised three questions; digitization questions were adapted from Rosa *et al.* (2023), Government Intervention questions from Pryor (2002), Shaffer (1995), and Firm Performance questions from Jarvis *et al.* (2000), Roloff (2023).

When choosing and adapting questions, we were aware that respondents' situations may differ from past studies. For example, few MA studies consider the small business perspective (Eckstein *et al.*, 2023), and in deep uncertainty, small businesses primarily seek business survival first (Katare *et al.*, 2021). Hence, questions such as “Our financial performance has exceeded our competitors” (Khan, 2020, p. 10) may have been irrelevant during COVID-19, hence were omitted.

In SEM studies, qualitative data may facilitate triangulation and richer descriptions (Asseraf *et al.*, 2019). A complimentary approach was undertaken whereby the qualitative data were used to clarify quantitative results in the discussion section (Leech and Onwuegbuzie, 2007). Each of the MA, digitization, government intervention, and firm performance questionnaire sections requested respondents to add free text relating to their experience of that construct. For example, “How do you feel about the various government guidance and changes you needed to address?”. The final question, “Please add further comments about working in a pharmacy during COVID-19,” allowed for further qualitative

responses. Besides qualitative data attained via the questionnaire, grey literature, such as government media releases were used for triangulation.

Data Analysis

Quantitative analysis comprised SEM, a set of statistical methods and procedures that aids researchers in estimating relationships between variables. We used partial least squares structural equation modeling (PLS-SEM), which is widely used in marketing studies and aids theory development (Sarstedt *et al.*, 2022). The SEMinR R package (Ray *et al.*, 2022) was primarily used for analysis, and the model was analyzed with the moderator present (Becker *et al.*, 2022). To enhance transparency, Hair *et al.* (2021) and Sarstedt *et al.* (2022) recommendations guided our PLS-SEM procedure and methods. Qualitative data were coded in NVivo software (Lumivvero, 2024). The text was coded to constructs of our conceptual model being sensemaking, MA, digitization (DIG), government intervention (GOV), and firm performance (PER).

Results

Multi-step analysis is undertaken in this section (Hair *et al.*, 2021). First, the measurement and then the structural models are evaluated. Finally, moderation analysis is performed.

Measurement Model Evaluation

Table II shows loadings, internal consistency reliability, and convergent validity. We removed indicators with low loadings, where removal raised composite reliability or AVE above thresholds (Saleh Al-Omouh *et al.*, 2021); mar_06 and mar_07. Two internal consistency reliability measures were used, Cronbach's α and composite reliability ρ_a (Hair *et al.*, 2021). Reliability is assumed in this study as concept approximations for both measures are greater than 0.70 and less than 0.95 (Sarstedt *et al.*, 2022). All constructs' average variance extracted (AVE) is greater than 0.50, indicating acceptable convergent

validity (Sarstedt *et al.*, 2022). Finally, discriminant validity was confirmed using the heterotrait-monotrait (HTMT) ratio of correlations (Table III), with all values below 0.90 (Hair *et al.*, 2021).

Table II

Measurement model results

Concept	Indicators	Indicator loading	Cronbach's α	Rho _a	AVE
Marketing agility (MA)	mar_1: We needed to adapt how we delivered products and services to customers.	0.742	0.771	0.774	0.519
	mar_2: We managed to adapt the products and/or services offered.	0.746			
	mar_3: We were fast at making changes when needed.	0.796			
	mar_4: I understood why the pharmacy needed to adapt.	0.668			
	mar_5: Communication between staff and customers helped me better understand all the changes.	0.638			
Digitization (DIG)	dig_1: Our pharmacy increased the use of digital technology.	0.870	0.762	0.792	0.680
	dig_2: Our pharmacy improved the way we worked through the use of digital technology.	0.888			
	dig_3: I used social media, WhatsApp, websites or other technology to communicate or get information related to the work I do.	0.703			
Government Intervention (GOV)	gov_1: Government directives affected our business operations or decisions.	0.944	0.870	0.941	0.790
	gov_2: The level of government involvement in our industry increased.	0.797			
	gov_3: The government frequently changed guidelines that affected our business.	0.920			
Firm Performance (PER)	per_1: The pharmacy sales increased.	0.868	0.872	0.875	0.796
	per_2: To the best of my knowledge, the pharmacy performed well financially.	0.925			
	per_3: We were never in danger of going out of business.	0.881			

Table III

Discriminant validity using HTMT

	DIG	MA	GOV
DIG			
MA	0.337		
GOV	0.081	0.396	
PER	0.203	0.109	0.261

Having confirmed validity and reliability, the structural model is assessed.

Structural Model Evaluation

Per Table IV, variance inflation factor (VIF) values are below three, hence no likely critical collinearity issues (Sarstedt *et al.*, 2022). R^2 (coefficient of determination) values should be comparable with other similar studies (Legate *et al.*, 2023) with MA studies including $R^2 \approx 0.1$ (e.g., Tarn and Wang (2023), Vaillant and Lafuente (2019)). Thus, this study's R^2 values are assumed valid yet low (Hair *et al.*, 2021), suggesting indicators may not fully explain the constructs measured. For the structural paths, a β closer to +1 or -1 denotes a strong relationship (Legate *et al.*, 2023), and $t > 1.96$ at 5% significance is indicative of statistical significance, albeit lower levels may be acceptable dependent on other measures (Hair and Alamer, 2022).

Table IV

Structural model estimates

	VIF	Path coefficient (β)	T Stat. (t)	2.5% CI	97.5% CI	R^2
DIG -> PER	1.121	0.101	1.534	-0.031	0.225	0.101
MA -> DIG	1.119	0.328	4.981	0.232	0.487	0.108
MA -> PER	1.240	0.140	1.939	0.010	0.293	0.106
MA->DIG->PER	-	0.035	1.312	-0.011	0.090	-
GOV->PER	1.443	-0.232	-3.929	-0.356	-0.125	0
GOV->DIG	1.428	-0.115	-1.599	-0.261	0.020	0

Note: CI = confidence interval at 5% significance level (percentile method) from 10,000 bootstrap samples.

Consequently, for the MA->PER structural path ($\beta=0.140$, $t=1.939$, $CI=[0.010,0.293]$), the antecedent MA shows a weak positive impact on PER. Thus, H1 is supported. For MA -> DIG ($\beta=0.328$, $t=4.981$, $CI=[0.232,0.487]$), MA has a medium-weak positive impact on DIG; hence H2 is supported. The DIG-> PER relationship lacks statistical significance ($t=1.534$) with a weak β of 0.101 and CI of $[-0.031,0.225]$. Therefore, H3 is not supported. The indirect mediating effect MA->DIG->PER is 0.005, with $\beta=0.035$ and $t=1.312$. Hence, we find a direct-only (no mediation) relationship (Zhao *et al.*, 2010), so H4 is unsupported.

Moderation Analysis

Interestingly, as shown in Table IV, and in the absence of MA, the GOV->PER ($\beta=-0.232$, $t=-3.929$, $CI=[-0.356,-0.125]$), and possibly GOV->DIG ($\beta=-0.115$, $t=-1.599$, $CI=[-0.261,0.020]$) paths show that higher government intervention may lead to lower performance and lower digitization. Furthermore, low R^2 values indicate low in-sample predictive power. However, moderator measurement in small samples should be used cautiously and supported by theory (Hair *et al.*, 2021, Morrow *et al.*, 2022). Memon *et al.* (2019) thus suggested slope analysis as valuable in visualizing moderator relationships. As such, Figure 2 illustrates the GOV moderating role in the MA->PER relationship while Figure 3 shows GOV in the MA->DIG relationship. In the figures, higher levels of GOV are shown at +1 standard deviation, default levels at mean, and low levels at -1. Figure 2 shows a low positive GOV influence on MA->PER with a slightly steeper line at +1SD. In Figure 3, the pronounced upward slope at +1SD indicates GOV has a moderate positive influence on MA->DIG, especially at high levels of government intervention. Based on this evidence, H5 and H6 are supported, and we discuss this further in the next section.

Figure 2.

Government moderator slope analysis – marketing agility to firm performance

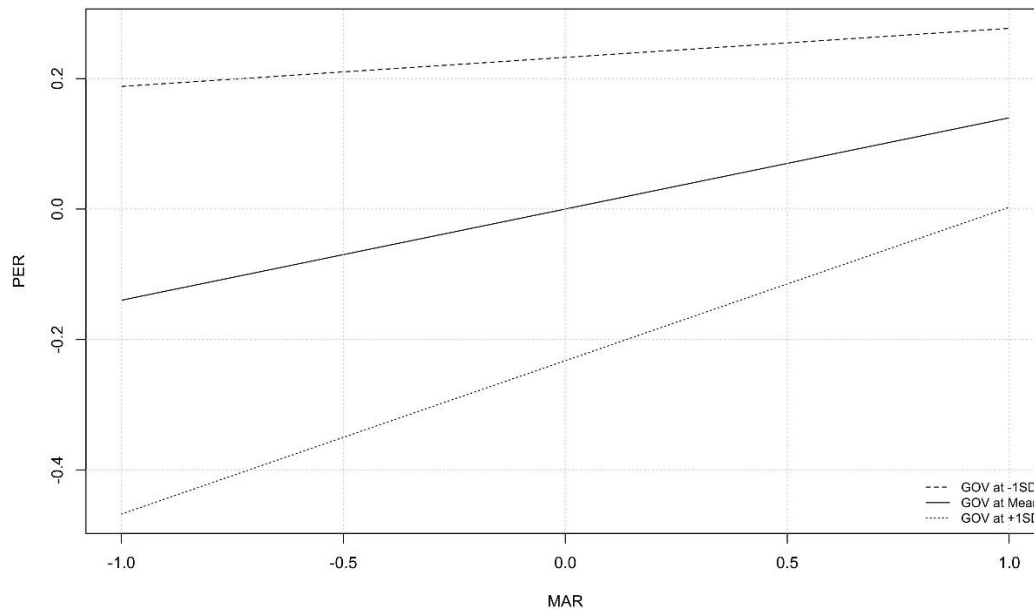


Figure 3.

Government moderator slope analysis – marketing agility to digitization

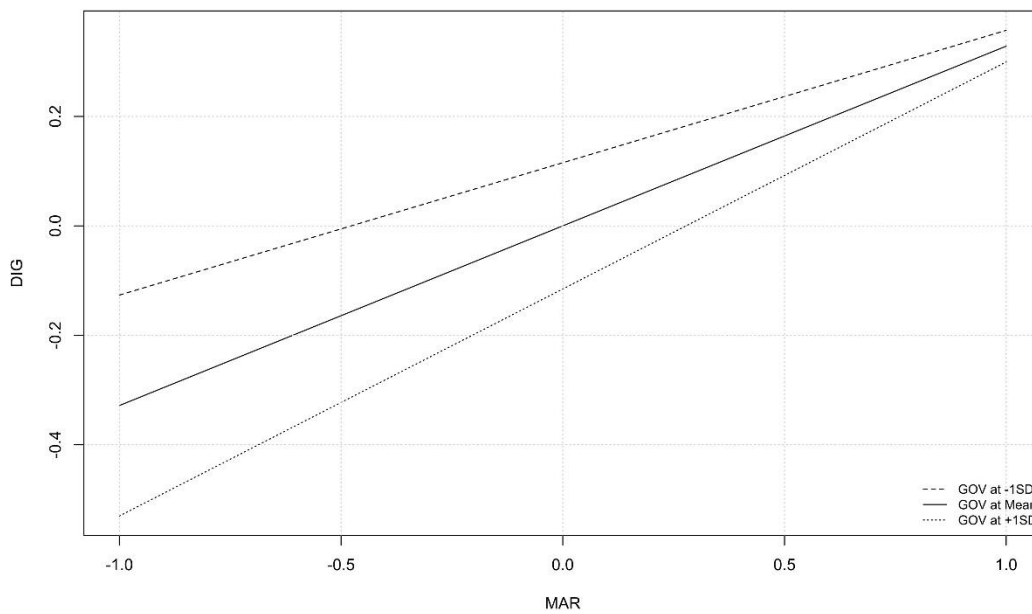


Table V is a summarization of the hypothesis testing.

Table V

Hypothesis testing outcomes

	Supported	Summary
H1	Yes	Weak positive
H2	Yes	Weak positive
H3	No	Statistically insignificant

H4	No	Direct only (no mediation)
H5	Yes	Low moderating effect
H6	Yes	Prominent moderating effect.

Discussion

Pharmacies are critical healthcare providers, and this study set out to understand influences on pharmacy performance in deep uncertainty. The primary theoretical perspective was MA, a relatively new and understudied topic (Eckstein *et al.*, 2023), and in the early stages of marketing concept development, empirical evidence is needed to advance a topic (Bergkvist and Eisend, 2021). As such, this study advanced MA conceptualization. The hypotheses were tested with PLS-SEM, considering digitization and government interventions. The results present interesting perspectives and important implications that are now discussed.

Theoretical Implications

Relating to RQ1, results showed that MA led to firm performance in deep uncertainty. Prior studies described performance benefits in VUCA, although there are few MA studies in deep uncertainty (Eckstein *et al.*, 2023). Our research findings on positive firm performance were supported by respondent comments indicating MA changes, such as “We moved to a delivery model for a lot of our business,” and financial implications, “Financially, the pharmacy did well.”

Also agreeing with prior studies, MA positively influenced digitization (Thoumrunroje and Racela, 2022). Moderation slope analysis showed that government intervention had a low influence on the direct MA impact on performance and, responding to RQ3, a prominent impact on digitization from MA (yet we did not find that digitization leads to performance, nor that MA impacts performance via digitization, in response to RQ2). Moderation was accompanied by low R^2 values indicating low explanatory power, and triangulation showed that government intervention was complex and overarching. Thus, government intervention is further analyzed.

Few MA studies consider the role of government, possibly because measuring government intervention's impact on businesses is complex (De Jong and Van Witteloostuijn, 2015, Knowles and Garces, 2000). However, understanding the role of government is important, as Stiglitz (2021, p. 6) noted, "To ignore the role of government is to ignore a very large fraction of the economy." Yet during COVID-19, government interventions expanded in scope and affected many aspects of business (Parajuli *et al.*, 2022), from demand to supply and even with direct financial assistance; as a respondent noted, "Without government financial help, we would have gone bust." For example, pharmacy demand changed as other retailers were required to cease brick-and-mortar trading, and supply was affected by mandates such as restricting the number of customers in a store (The Pharmacy Guild of Australia, 2020). The heightened government intervention was echoed in many questionnaire comments such as "There were a lot of changes," and "It was very ad-hoc and reactive."

Pharmacies widely implemented MA, and MA was a reaction to the trading environment brought about by government intervention. For example, "We had new systems in place right from the first day, but constantly evolving as needed," and "Everything was new, sometimes we couldn't wait to find out, just had to do what was best right then and there." MA being implemented quickly in response to deep uncertainty has been described in the MA literature (Moi and Cabiddu, 2022) and is expected as government has an intervening role in stabilizing markets and serving the public good (Stiglitz, 2021). Furthermore, the sensemaking lens supports this assumption; Weick (2005) described how sensemaking creates a new reality, an enacted environment, that may require further sensemaking. Hence, government was taking action in deep uncertainty that created an environment pharmacies needed to address, largely using MA.

Weick (1989) argued for plausibility in theory, and we offer that, after considering grey literature and the theory, and in response to RQ3, it is implausible that government had a

low moderating role in firm performance, as slope analysis demonstrated (Figure 2). After all, SEM analysis may be affected where the moderator is significantly broad (Memon *et al.*, 2019). We hence propose that somewhat contrary to our SEM findings, government had a high and positive moderating role in firm performance, in addition to moderating MA implementation.

Our significant theoretical contributions are, therefore, twofold. Firstly, we advance the existing understanding of MA, particularly the nuanced role of government interventions, while highlighting that the deep uncertainty context may require rethinking how government interventions are measured relating to firm performance. Second, sensemaking is a well-researched topic, yet COVID-19 presented an opportunity for further conceptualization, (Christianson and Barton, 2021), and our contribution addresses this need.

Managerial and Practitioner Implications

Sensemaking is invoked in an unknown environment that is new and unknown; hence, it is difficult, to fully plan for future deep uncertainty (Teece *et al.*, 2016, Weick, 2005). However, learning from past experiences may lessen the impact of future deep uncertainty (Weick *et al.*, 2005). This research's implications are anticipated to inform primarily government, industry bodies, and pharmacies and are now discussed.

Unfortunately, small businesses are particularly vulnerable to deep uncertainty and require positive financial outcomes to survive (Katare *et al.*, 2021). However, Australian pharmacy performance was often maintained or improved (Richardson, 2023). Our findings thus support broad intervention by government in the industry, with MA aiding pharmacies in addressing rapidly changing environments. The government's interest is in the public good, of which healthcare provision is a part (Calder *et al.*, 2019, Pharmacy Board of Australia, 2019), and interventions maintained healthcare provisions by aiding pharmacy trading. At a

micro level, responses to our qualitative questions mainly showed dissatisfaction with government; many of these comments focused on specific aspects such as government communication, for example, “There was definitely a lack of communication between the government and pharmacies and we were left in the dark most of the time.” Discussion relating to pharmacy dissatisfaction during deep uncertainty is widely published (e.g., Gicic *et al.* (2022), Parajuli *et al.* (2022)). Thus, there is an imbalance between the pharmacy industry's financial outcomes, which were often positively influenced by government, and individual pharmacy perceptions of governments during deep uncertainty.

The literature offers various means for practitioners to lessen the impact of deep uncertainty, such as scenario planning and employing a diversity of thinking in teams (Kalaiganam *et al.*, 2021, Teece *et al.*, 2016). Furthermore, practitioners will be informed that MA is a necessity rather than a choice in some deep uncertainty. Yet MA facilitates financial performance in VUCA (Zhou *et al.*, 2019) and deep uncertainty, as found in the study. As such, practitioners may benefit by implementing MA in advance of deep uncertainty to take advantage of the financial benefits while simultaneously preparing for future deep uncertainty.

Our MA and digitization findings may further inform managers: We found MA to lead to digitization, and prior research shows that digitization facilitates MA and other agility (Moi and Cabiddu, 2022, Troise *et al.*, 2022). Hence, continued digitization and adoption of MA may help pharmacies prepare for and manage future uncertainties.

Limitations and Future Research Directions

Our focus on Australian pharmacies may hamper geographic applicability. Pharmacies are significant healthcare, employment, and economic contributors, with varying trading environments and legal requirements (Gicic *et al.*, 2022, Richardson, 2023). Research in

other places may deliver findings specific to countries and aid in further informing practice and academia. Furthermore, there is little research on MA in retail or healthcare, and this study illustrates MA benefits. As such, further MA research will inform these sectors.

We advanced that the increased scope of government intervention in COVID-19 complicated our measurement. Additionally, research into the impact of government intervention on small businesses is made difficult by the lack of publicly available data and the reliance on respondents' perceptions (De Jong and Van Witteloostuijn, 2015). As such, further understanding of how government affects retail performance in deep uncertainty will aid future measurement. We studied an industry with high government intervention, yet there is limited research into industries with lesser intervention. Hence, understanding MA in deep uncertainty without significant interventions will be of value.

Notably, much marketing research is generalizable, yet this paper is industry and context-specific. Stremersch *et al.* (2023) highlighted the importance of context-specific marketing studies where the industry's impact and size are significant. Community pharmacy failure's societal and economic impact would arguably profoundly negatively impact healthcare. Furthermore, research may benefit pharmacies in other deep uncertainties, such as war, political unrest, and economic challenges. Thus, we argue that the context-specificity of this research is important.

Finally, we note that qualitative data in the survey instrument responses indicated that respondents were answering considering the early months of COVID-19. Yet our questions did not request responses about trading in specific COVID-19 periods. Future longitudinal studies will benefit the understanding of firm performance throughout COVID-19.

Conclusion

This study aimed to understand pharmacy performance further considering MA. Using a sensemaking lens, a framework was proposed to investigate digitization's mediating role and government's moderating role during deep uncertainty. The quantitative results supported that MA leads to firm performance and digitization, with government intervention having a positive but low influence on performance from MA yet a strong positive impact on digitization. Results for digitization leading to firm performance were statistically insignificant, digitization does not mediate MA to firm performance. The results suggest that MA was valuable to pharmacies in COVID-19. However, triangulation showed that government interventions impacted supply, demand, and direct financial influence that affected measurement.

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Appendix A

Table VI

Questionnaire details

Indicator	Question	Answer type
GEN_1	In which country did you mostly work during COVID-19?	Select country name
GEN_2	Are the pharmacy/pharmacies you mostly worked in part of a larger group of pharmacies?	Yes/No
GEN_3	Did you mostly work in an urban area during COVID-19?	Yes/No
<u>Marketing agility</u>		
Within your pharmacy during COVID-19, how much do you agree with each statement from "strongly disagree" to "strongly agree":		
MAR_1	We needed to adapt how we delivered products and services to customers.	Likert (1 to 7)
MAR_2	We managed to adapt the products and/or services offered.	
MAR_3	We were fast at making changes when needed.	
MAR_4	I understood why the pharmacy needed to adapt.	
MAR_5	Communication between staff and customers helped me better understand all the changes.	
MAR_6	We improvised when there was a lack of information.	
MAR_7	Sometimes, we needed to make changes without having complete information.	
MAR_8	How confident were you in making changes during COVID-19 that affected how you did business? Please add a few sentences.	Paragraph text
<u>Digitization</u>		
Within your pharmacy during COVID-19, how much do you agree with each statement from "strongly disagree" to "strongly agree":		
DIG_1	Our pharmacy increased the use of digital technology.	Likert (1 to 7)
DIG_2	Our pharmacy improved the way we worked through the use of digital technology.	
DIG_3	I used social media, WhatsApp, websites or other technology to communicate or get information related to the work I do.	
DIG_4	How do you feel about any technology used or introduced during COVID-19? Please add a few sentences.	Paragraph text
<u>Government</u>		
Within your pharmacy during COVID-19, how much do you agree with each statement from "strongly disagree" to		

"strongly agree":		
GOV_1	Government directives affected our business operations or decisions.	Likert (1 to 7)
GOV_2	The level of government involvement in our industry increased.	
GOV_3	The government frequently changed guidelines that affected our business.	
GOV_4	How do you feel about the various government guidance and changes you needed to address? Please add a few sentences and examples	Paragraph text
<u>Performance</u>		
Within your pharmacy during COVID-19, how much do you agree with each statement from "strongly disagree" to "strongly agree":		
PER_1	The pharmacy sales increased.	Likert (1 to 7)
PER_2	To the best of my knowledge, the pharmacy performed well financially.	
PER_3	We were never in danger of going out of business.	
PER_4	Please add a few sentences about your pharmacy performance, what went well, and what didn't?	Paragraph text
<u>General</u>		
GEN_4	Please add further comments about working in a pharmacy during COVID-19. For example, what went well and what didn't, how you felt about working during COVID-19, what could be done better next time etc.	Paragraph text

Note: All questions mandatory except MAR_8, DIG_4, GOV_4, PER_4, and GEN_4. Indicators that had low loadings, and where removal raised composite reliability or AVE above thresholds, were removed (MAR_06 and MAR_07) (Saleh Al-Omoush *et al.*, 2021) post data collection.