

SME Managers' Learning from Crisis and Effectual Behaviour

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Abstract

Purpose – The COVID-19 pandemic has entailed a critical situation for small- and medium-sized enterprises (SMEs) since restrictions on business activity have been imposed by authorities to reduce infections. The result is that SME managers must manage their firms through a crisis under very challenging conditions. The purpose of the present paper is to address how SME managers respond in the second ‘wave’ of COVID-19 based on their perceived uncertainty as well as eventual learning from the first ‘wave’ in early 2020.

Design/methodology/approach – Four hypotheses are presented, resulting in a theoretical model relating crisis impact, uncertainty, learning from crisis experience and effectuation behaviour. The theoretical model is tested through an empirical questionnaire-based quantitative study of Norwegian SMEs in the bar and restaurant sector, applying structural equation modelling (SEM) as the analytical technique.

Findings – The results show that impact from COVID-19 leads to both uncertainty and learning, and further, that uncertainty primarily leads to a focus on affordable loss while learning leads to experimentation behaviour.

Originality – The present paper is novel in several ways. First, it empirically studies a unique situation where a crisis encompasses two ‘waves’ of significant impact on the firms in focus. This provides the opportunity to address managers’ learning through a crisis for application in a very similar situation later. Second, the present paper provides an empirically supported model of how uncertainty or learning leads to different dimensions of effectuation behaviour in a crisis situation.

Keywords Learning, Effectuation, COVID-19, Coronavirus, Uncertainty, Crisis

Paper type Research paper

Introduction

Small- and medium-sized enterprises (SMEs) are essential for economic prosperity at the global, national, regional, local and individual levels (Azari *et al.*, 2017; Gamidullaeva *et al.*, 2020; Kasseeah, 2016) through employment opportunities and tax incomes (Dvouletý, 2017). Starting in early 2020, the world has seen a novel threat to businesses globally: the COVID-19 pandemic (Korsgaard *et al.*, 2020). Managing a small and/or nascent firm in times of crisis is definitely not business as usual (Doern *et al.*, 2019; Kuckertz *et al.*, 2020), and SME managers are exposed to significantly increased uncertainty and adversity (Brown and Rocha, 2020; Ratten, 2020) while not having the required resources to cope with the situation (Doern, 2016). Thorgren and Williams (2020) even state that SMEs are the organisations most threatened by the effects of COVID-19. The present paper focuses on how SME managers respond to a severe crisis situation, such as COVID-19.

Previous research on past crises, such as the global financial crisis (Laskovaia *et al.*, 2019) and natural disasters (Martinelli *et al.*, 2018), is currently complemented by the rapidly increasing body of research addressing the effects of COVID-19 on small and/or nascent firms. Some studies focus on managers' immediate responses to the crisis, including how SME managers pursue protectionist strategies to survive the crisis (Thorgren and Williams, 2020). Other studies focus on how managers transform business models to make use of digital technologies (Priyono *et al.*, 2020), as well as on different responses to crises by managers, along with suggestions for government support measures (Kuckertz *et al.*, 2020). In addition to immediate responses and strategies, the SME manager's task is not only to survive, but also to be prepared for future situations (Giones *et al.*, 2020). Experience gained from crises may provide invaluable lessons and new behaviours to cope with future crises (Etemad, 2020), and the manager's self-learning is thereby an essential instrument for handling upcoming situations and pursuing opportunities in the future (Priyono *et al.*, 2020).

The present paper relates to the emerging focus on managers' learning through a crisis and how the managers' negative experiences present opportunities for unique learning outcomes (Cannon and Edmondson, 2005) and behavioural changes (Shepherd and Cardon, 2009). Since a crisis is a process covering different phases rather than a single event (Lettieri *et al.*, 2009), SME managers' learning throughout the crisis may inform the way they respond to new challenges presented by the crisis. Starting with the outbreak of COVID-19 in Europe in the early spring of 2020, different levels of regulatory restrictions on businesses have – at the time of this writing – been around for more than nine months. After a period of decline in the number of infections in most European countries during the summer of 2020, many societies are facing a second 'wave' of COVID-19 infections, which has led to new and stricter restrictions in many regions. The purpose of the present paper is to address how SME managers respond in the second 'wave' of COVID-19, based on their perceived uncertainty as well as eventual learning from the first 'wave' of the infection outbreak in the first half of 2020.

Recent research indicates flexible business planning activities are needed to allow managers' learning to be put into practice, since flexibility allows limiting the downside risk while also making do with existing resources (Giones *et al.*, 2020). Nelson and Lima (2020) suggest *entrepreneurial effectuation* (cf. Sarasvathy, 2001) as a fruitful theoretical lens to understand how individuals and organisations respond to crises. This is because entrepreneurial

effectuation presents an alternative approach to traditional managerial thinking by promoting experimentation based on the current situation while also controlling the downside risks of taking action (Baber *et al.*, 2019; Matalamäki, 2017). Hence, studies have found that managers facing uncertainty and resource constraints, which are also characteristics of crisis situations, such as the one due to COVID-19 (Doern, 2016; Ratten, 2020), make do by adopting effectual decision-making in their practice (Laskovaia *et al.*, 2019; Shirokova *et al.*, 2020). There is existing empirical evidence that supports a positive relationship between managers' experienced uncertainty and effectuation (Frese *et al.*, 2020); continuous learning from experience is also central to effectuation logic (Haneberg, 2019; Matalamäki, 2017). The present paper contributes to the literature by conducting a novel empirical study on the relationship between managers' learning from experiencing a major crisis and effectual behaviour.

The next section presents the supporting literature on entrepreneurial effectuation and its relevance to understanding SME managers' behaviour and learning in crisis situations characterised by adversity and uncertainty. After pinpointing two dimensions of effectuation that can be considered particularly relevant for the present paper – experimentation and a focus on affordable loss – a set of four hypotheses is developed. These four hypotheses are tested in a quantitative empirical study of SME managers in Norway operating in the bar and restaurant sector; the method for this is introduced in section three. The bar and restaurant sector represents a unique empirical context since the crisis impacts across the whole sector are very pronounced and controlled through specific regulatory means by national authorities. The results of the empirical study are presented in section four, followed by the discussion and conclusions sections.

Background Literature and Hypotheses

Crises, Uncertainty and Learning from Negative Experiences

While there is ambiguity in how crises could be defined (Herbane, 2010), a crisis can be formulated as a low-probability event that results in severe consequences for individuals, organisations and society (Doern, 2016). Thorgren and Williams (2020) point out that some crises, such as the COVID-19 pandemic, are particularly rare and unpredictable and hence referred to as 'black swans'. Ambiguity and unpredictability inevitably expose SME managers to uncertainty (Brown and Rocha, 2020; Ratten, 2020). Uncertainty may be divided into three types: state uncertainty (how the future environment will be), effect uncertainty (how the future environment will affect the organisation), and response uncertainty (the consequences of different response options). Uncertainty induced by the COVID-19 pandemic represents a combination of all three (Etemad, 2020), which leads to the first hypothesis that sets a basic premise for the present paper:

H1: There is a positive relationship between the negative impact of a crisis and the managers' experienced uncertainty.

Response uncertainty is about how managers are uncertain about choosing the appropriate response to emerging challenges and may be forced to make decisions with uncertain outcomes

(Brinckmann *et al.*, 2010). When decisions cannot be made based purely on externally available information, managers rely on reflection upon their prior experiences (Chaston *et al.*, 1999; Wood Daudelin, 1996); hence, there has been a strong focus on learning in the business management literature (Higgins and Aspinall, 2011). There are two interrelated tiers of literature relating to managers' learning that are particularly relevant for the purpose of this paper: learning from *critical events* (cf. Cope, 2003) and learning from business *failure* (cf. Cope, 2011); both revolve around how managers learn from experiencing a challenging situation based on external causes like a crisis (Cardon *et al.*, 2011). In this regard, failure does not need to be terminal to the enterprise but could instead be thought of as severely challenging incidents that could be terminal or cause long-lasting harm to a firm in other ways. Both tiers of literature are based on the theory of experiential learning, which regards how individuals learn through an iterative process of concrete experiences, reflective observation, abstract conceptualisation and active experimentation (Kolb, 1984). Subsequently, managers learn through continuously creating meaning from experiences (Politis, 2008; Schwandt, 2005) and apply their learning in later relevant situations (Cope, 2003). For the purposes of the present paper, learning from previous experiences in the crisis (such as during the first 'wave' of COVID-19 infections) is expected to lead to learning that may be applied to respond to later events in the crisis (such as during the second 'wave' of COVID-19 infections), which leads to the second hypothesis:

H2: There is a positive relationship between the negative impact of a crisis and the managers' learning from challenging experiences due to the pandemic.

Uncertainty, Learning and Entrepreneurial Effectuation

Entrepreneurial effectuation has emerged as a fundamental concept in entrepreneurship research. It originally considered how expert and serial entrepreneurs make decisions in situations of uncertainty (Sarasvathy, 2001). During the last two decades, effectuation has also been used as a fruitful perspective for how inexperienced entrepreneurs (Reymen *et al.*, 2015), student entrepreneurs (Haneberg, 2019) and SME managers in different contexts (Alsos *et al.*, 2016; Matalamäki, 2017) act in uncertainty and limit the downside risk of their actions (Giones *et al.*, 2020). The research field has developed a multifaceted understanding of effectuation (Chandler *et al.*, 2011; Frese *et al.*, 2020); accordingly, effectuation may be characterised by the following four dimensions (Eyana *et al.*, 2018; Frese *et al.*, 2020):

- *Experimentation*: Trial-and-error changes in action over a short period to explore new opportunities and succeed in existing markets.
- *Flexibility*: Exploiting contingencies rather than pre-existing knowledge in the firm.
- *Pre-commitments*: Emphasising the firm's pre-commitments and alliances.
- *Affordable loss*: Evaluation of actions according to whether the firm can survive an eventual total failure of those actions.

Effectuation, represented by the four dimensions mentioned above, comes into play in high-uncertainty environments where goals, predictability and an independent environment are not available, and offers an opportunity for SME managers or entrepreneurs to control rather than predict the future (Wiltbank and Sarasvathy, 2010). This is through a focus on experimentation with the means at hand and carefully addressing affordable loss, which represents prioritising

possible effects from potential actions (Sarasvathy, 2003). Effectuation is in contrast to causation, which represents the traditional notion of management most viable in situations where it is possible to identify the current environment and foresee different potential future outcomes (Agogué *et al.*, 2015). Effectuation relates to uncertain situations where often the current environment, possible future developments or the outcomes of managers' behaviours cannot be anticipated or known, while causation relates to how managers may consider risks through evaluating information. Importantly, effectuation and causation are not mutually exclusive, and effectuation represents an alternative alongside causal decision-making (Gabrielsson and Politis, 2011; Wiltbank and Sarasvathy, 2010).

This paper focuses on two dimensions of effectuation behaviour: affordable loss and experimentation. This is for several reasons, all of which relate specifically to the impact of the COVID-19 pandemic on SMEs in the bar and restaurant sector. First and foremost, as the growth in COVID-19 infections in urban regions has made regional and national authorities significantly limit the business activity of bars and restaurants, the financial means of impacted SMEs have effectively been reduced (Kuckertz *et al.*, 2020). Affordable loss and experimentation are both closely related to how managers administer their firms' resources: experimentation is essentially about what to do with the resources, and affordable loss is about how not to lose too many resources as a result of those actions. Flexibility is operationalised as allowing the firm to evolve and adapt (cf. Chandler *et al.*, 2011; Frese *et al.*, 2020), and thus here it is considered less relevant to a major crisis since most SME managers would have less of a choice and instead be bound to the situation imposed upon them. Also, the operationalisation of pre-commitments (cf. Chandler *et al.*, 2011; Frese *et al.*, 2020) focuses on managers' relationships and ties with customers and suppliers, which is considered less relevant in the specific case of the bar and restaurant sector, as customers are prohibited from interacting with the SMEs. Last but not least, recent research has shown how SME managers either respond reactively or proactively to crises such as COVID-19 (Haneberg, 2020). In that research, reactive behaviours included cost-saving efforts, such as letting employees go or reducing spending on product development or marketing. Proactive behaviours included an increased focus on revenue-inducing (or -sustaining) efforts, such as developing new products or acquiring new customers. Thus, there are similarities between reactive behaviours and a focus on affordable loss and between proactive behaviours and experimentation, which positions the two dimensions of effectual behaviour in relation to recent research on the effects of COVID-19 on small firms. Based on the above, a third hypothesis that aligns with Frese *et al.* (2020) was developed for the present paper. It comprises two sub-hypotheses with regard to both affordable loss and experimentation behaviours and is presented as follows:

H3a: There is a positive relationship between the managers' experienced uncertainty and a focus on affordable loss.

H3b: There is a positive relationship between the managers' experienced uncertainty and experimentation behaviour.

Effectual decision-making is something that is developed, and it follows that there is a fundamental relationship between effectuation and learning. Previous research has shown how entrepreneurs develop effectual reasoning and decision-making through experiencing critical

events and learning from them (Cai *et al.*, 2017; Haneberg, 2019). In general, experience has been shown to increase effectual behaviour (Politis, 2008; Sarasvathy, 2001). Thereby, a fourth hypothesis relates managers' learning from challenging experiences in the COVID-19 pandemic to effectual behaviour in a manner similar to how hypothesis 3 relates uncertainty and effectual behaviour. This is defined in the following two sub-hypotheses:

H4a: There is a positive relationship between the managers' learning from challenging experiences due to the pandemic and a focus on affordable loss.

H4b: There is a positive relationship between the managers' learning from challenging experiences due to the pandemic and experimentation behaviour.

The four hypotheses presented in this section together outline a set of relationships that can be structured in a theoretical model for further study. The theoretical model is presented in Figure 1 below and is the basis for the empirical work presented next.

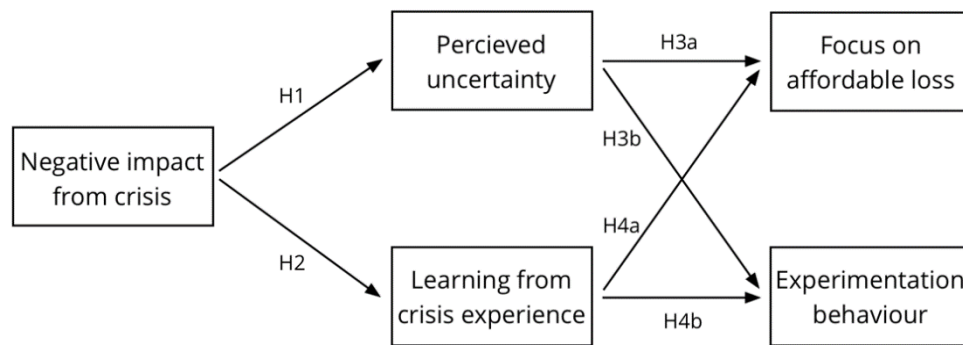


Figure 1: Theoretical model comprising the set of four hypotheses (H1–H4) developed in this section. Arrows represent positive relationships, and hypothesis numbers are denoted on the arrows.

Method

Research Context

The research was conducted in November 2020 as the number of COVID-19 infections in Oslo and Bergen, the two largest cities in Norway with approximately one million and 250,000 citizens, respectively, were again rapidly increasing after a relatively normal summer season. Hence, a second round of restrictions on individuals and businesses was imposed by the authorities, which particularly impacted businesses related to tourism, well-being and restaurants. Significant differences exist between industries, and whereas some, such as music festivals and conference centres, are effectively banned from their normal activities due to governmental regulations, opportunities for increased revenue are created for others, such as delivery services and digital platforms. Figure 2 below illustrates the two waves of crisis-induced regulatory restrictions in Oslo and Bergen.

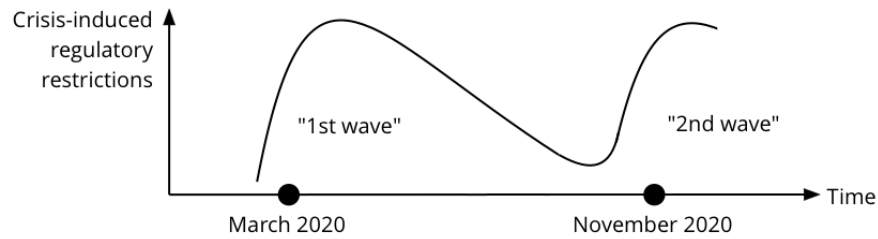


Figure 2: Conceptual – and still tentative – crisis timeline. The circular dots on the horizontal timeline represent the instances when authorities introduced the most significant restrictions on businesses in the bar and restaurant sector in Oslo and Bergen.

Sample and Procedures

An online questionnaire was distributed to relevant firms through email and SMS invitations. The relevant firms had to be registered with the NACE (Nomenclature des Activités Économiques dans la Communauté Européenne) level-2 code 56, have their operations in the city regions of Oslo or Bergen, and – given the focus on SMEs – have reported a maximum of 100 employees and one million Euro in annual revenues in 2019¹. The contact information of firms that were registered with a valid email and/or mobile phone number was extracted from a database available from the national authorities in Norway. Firms that after screening turned out to be external accountants, attorney offices, holding companies not directly involved in actual operations of firms in the bar and restaurant sector or were in other ways violating the selection criteria listed above were subsequently removed from the list. The aim was to obtain responses from actual managers in the firms. After curation, the list contained 888 firms with an email address or a mobile phone number.

Two reminders were sent to the firms on the list that did not respond to the initial invitation. The time between the initial invitation to the survey and the last registered response, including reminders, was two weeks. A short data collection timeline was prioritised since the COVID-19 crisis situation is continuously changing and would likely influence the responses if the data collection timeline was too long.

In total, 119 complete responses were received during the two-week period, which represents a response rate of 13.4%. Although a higher response rate would indeed have been advantageous, the response rate was deemed sufficient as compared to similar studies of small firms (Alsos *et al.*, 2016; Hajizadeh and Zali, 2016; Haneberg, 2020; Rutherford *et al.*, 2017). To conform to the set sampling criteria, 16 responses were removed from the dataset in cases where the firm was larger than 100 employees ($N = 13$) or the respondents were not managers in the firms ($N = 4$). An exception from the need for respondent's managing position was done if the firm size was four employees or fewer, as all involved individuals would likely have a central position in such 'micro-enterprises' (Shirokova *et al.*, 2020). Hence, the final dataset contained responses from 103 SMEs. Armstrong and Overton's (1977) recommendations were followed in order to exclude nonresponse biases by comparing the responses of early and late responders to the questionnaire. No differences were found at a 95% confidence level.

¹ In November 2020, 2019 was the last year for which financial reports were available.

The questionnaire offered respondents the opportunity to describe or comment upon their situation, and examples of the responses include: *'Right now I have to close my restaurant, and the consequences are enormous.'*, *'Others have extended their offers, which is, for my part, a problem since I am not a big fish with a lot of marketing means.'* and *'We would have launched our new concept in May but had to stop due to the coronavirus. Trying again with a new strategy now.'* In other words, the sample represents a wide range of different situations among the responding managers and firms as they face the COVID-19 crisis.

Measures

The questionnaire was developed based on research introduced in the preceding section. The questionnaire started with an introductory letter to respondents that explained the overall aim of the study and that all responses would be anonymous and presented the conceptual timeline (illustrated in Figure 2) as a frame of reference for the questions asked.

The *crisis impact* on the enterprise was measured by choosing a response to the statement, 'Evaluate to which degree the following statements are correct for you and your business', from the following seven items, based on Haneberg (2020) and developed specifically for the purpose of the present paper: (1) 'I/we experience significant reductions in our revenues (compared to, for example, the early fall of 2020)', (2) 'I/we feel it is difficult to cover the fixed costs of the business', (3) 'I/we consider my/our business to be less impacted by the pandemic as compared to other similar businesses', (4) 'The pandemic impacts our daily operations negatively', (5) 'The pandemic prevents me/us from further develop our enterprise', (6) 'It is difficult for me/us to handle the debt of the business', and (7) 'I experience the consequences as worse now than in the spring of 2020'. A seven-point Likert scale was used (1 = the statement is not at all true, 7 = the statement is very correct). The response to item number three was flipped before analysis to be in line with the directionality of the other six items.

Perceived uncertainty was measured by choosing a response to the statement, 'Evaluate to which degree the following statements are correct for you and your business' from the following three items, adapted from Frese *et al.* (2020): (1) 'It is unclear which changes in the environment the business should be particularly aware of', (2) 'The pandemic makes it very difficult to know how the environment of the business will develop in the future', and (3) 'It is very difficult to evaluate how the business opportunities will develop'. A seven-point Likert scale was used (1 = the statement is not at all true, 7 = the statement is very correct).

Learning from crisis experience was measured by choosing a response to the statement, 'Evaluate to which degree the following statements are correct for you' from the following five items, based on Liu *et al.* (2019) and Funken *et al.* (2020): (1) 'I have reflected upon how we could have handled the lockdown during spring 2020 in a better way', (2) 'I am now more alert to the developments in my business than I was during spring 2020', (3) 'I have, based on experiences from the lockdown during spring 2020, become better able to evaluate my business goals in relation to the current situation in my business', (4) 'I have extended my own behaviours based on experiences from the lockdown during spring 2020', and (5) 'I have, based on experiences from the lockdown during spring 2020, learned how I can better handle challenges in my business'. A seven-point Likert scale was used (1 = the statement is not at all true, 7 = the statement is very correct).

Focus on affordable cost was measured by choosing a response to the statement, ‘Evaluate to which degree the following statements are correct for you’ from the following three items, based on Chandler *et al.* (2011), Frese *et al.* (2020) and Roach *et al.* (2016): (1) ‘I am/we are careful not to risk more money than we are willing to lose, even if our ideas/plans are attractive/exciting’, (2) ‘I am/we are careful not to exceed the business’ financial abilities in case our projects fail’, and (3) ‘I am/we are careful not to tie up more resources than I am/we are willing to lose’. A seven-point Likert scale was used (1 = the statement is not at all true, 7 = the statement is very correct).

Experimentation behaviour was measured by choosing a response to the statement, ‘Evaluate to which degree the following statements are correct for you’ from the following five items, based on Chandler *et al.* (2011), Frese *et al.* (2020) and Roach *et al.* (2016): (1) ‘I/we experiment with new offers to our customers’, (2) ‘What our business offers now is significantly different from before the COVID-19 pandemic’, (3) ‘I/we have tested different approaches to gain new customers’, (4) ‘I/we have tested alternative ways to get revenue from existing customers’, and (5) ‘The business has adopted digital tools (e.g. social media, video conferencing, etc.) to reach customers’. A seven-point Likert scale was used (1 = the statement is not at all true, 7 = the statement is very correct).

Additional questionnaire questions checked the following: (1) the number of employees in the business, (2) if the respondent had a managing role in the enterprise (yes/no), and (3) if the respondent had founded the enterprise alone or with others (yes/no). Table 1 below presents descriptive statistics for these variables. Calculated values for Cronbach’s alpha (cf. Nunnally, 1978) are provided for the multi-item measures.

Measure	Mean	SD	Min	Max	Cro. α
Crisis impact (7 questionnaire items)	5.74	1.21	1.29	7	0.81
Perceived uncertainty (3 questionnaire items)	5.22	1.30	1.67	7	0.69*
Learning from crisis (5 questionnaire items)	4.68	1.46	1.2	7	0.80
Focus on affordable costs (3 questionnaire items)	5.88	1.36	1.33	7	0.88
Experimentation behaviour (5 questionnaire items)	3.95	1.67	1	7	0.82
Number of employees	15.48	18.88	0**	100	–
Respondent’s managing role (1 = yes)	0.86	0.34	0	1	–
Respondent founded the business (1 = yes)	0.49	0.5	0	1	–

Table 1: Descriptive statistics. *: very slightly lower than $\alpha \geq 0.70$, which is suggested as the threshold by Gliem and Gliem (2003). **: A few SMEs were organised as personal enterprises, which are not registered as employment as such by the national legislation.

Data Analysis

The questionnaire responses were curated in Microsoft Excel for statistical analysis using Stata/MP version 16.1. Departing from the theoretical model presented in Figure 1, the analysis employed structural equation modelling (SEM) using the maximum likelihood technique (Chin and Newsted, 1998). SEM is considered the second generation of multivariate analysis (Fornell, 1987), and through a combination of factor and path or regression analysis, offers the

opportunity to statistically test theoretical assumptions (such as those presented by the theoretical model in Figure 1) and model relationships among multiple predictor and criterion variables (Chin and Newsted, 1998; Hox and Bechger, 1998). Recent research has advocated for the use of SEM on smaller sample sizes (McNeish, 2020; van de Schoot and Miočević, 2020), whereas earlier norms suggested a sample size of at least 200–300. Small sample SEM requires the adaptation of evaluation methods in order to appropriately address model fit; the Swain chi-square test was developed for that purpose (McNeish, 2020; van de Schoot and Miočević, 2020). The p-value for chi-square was 0.353, while the p-value of Swain-corrected chi-square was 0.367, both well within accepted norms ($p > 0.05$) (Hox and Bechger, 1998). Further common fit indices were also used, as follows (cf. Kenny *et al.*, 2015; Xia and Yang, 2019): the root mean square error of approximation (RMSEA) assesses how far the hypothesised model is from a ‘perfect’ model. In the present paper, the RMSEA was found to be 0.032; an RMSEA value below 0.05 represents a ‘close fit’, according to Browne and Cudeck (1993). Furthermore, the comparative fit index (CFI) was found to be 0.996, and the Tucker-Lewis index (TLI) was found to be 0.990. According to Hu and Bentler (1999), both CFI and TLI values should be above 0.95 for a good model-data fit, which is indeed the case in the present paper. The overall conclusion after interpreting the different fit indices is that the SEM model fits the empirical data well.

Research Limitations

In research, there are always limitations, and the present paper is no exception. The present paper builds on cross-sectional data through one round of questionnaire responses, although a crisis process is being studied. Nevertheless, the questionnaire was rigorously developed to make it clear to the respondents the point in time to which each question refers. To create a focused questionnaire that was meaningful to the managers, two of the four effectuation dimensions were included. That choice was the result of a trade-off between coverage of all four dimensions and respondent fatigue, or even worse, a decreased response rate. Further, while the theoretical model is founded on literature valid to many types of firms, contexts, situations, and so on, the empirical data are from SMEs in the bar and restaurant sector in two specific cities in Norway during the unique COVID-19 situation. That means that the findings are directly applicable to those specific contextual boundaries, although they do provide insight that could likely be transferrable to other types of firms, other countries or different crisis situations. The present paper calls for further research along these lines. Finally, since the empirical phenomenon studied is quite focused, the total sample size remains comparably small in relation to other SEM studies in general. Despite the small sample size, the different fit indices suggest a good model fit; hence, the empirical data in the present paper is sufficient for statistical analysis using the presented theoretical model.

Results

The results of the SEM analysis are presented in Table 2 below and illustrated using the same structure as the theoretical model from Figure 1 in Figure 3 below. Analysis of the empirical data confirms hypotheses H1, H2, H3a and H4b at a $p < 0.001$ significance level. The factors for the supported relationships in the theoretical model are stronger (coefficients > 0.4), as evident from Table 2. Support for H1 means that there is a positive relationship between the impact of the COVID-19 crisis and the managers’ perceived uncertainty. Support for H2 means

that there is a positive relationship between the impact of the COVID-19 crisis and the managers' learning from the crisis. Hypotheses H3b and H4a are neither supported nor rejected, although there are tendencies for weaker positive relationships (coefficients < 0.25), as seen from Table 2. Thus, the results suggest that the managers' perceived uncertainty primarily leads to a focus on affordable loss (H3a) rather than experimentation behaviour (H3b) and that the managers' learning from the crisis primarily leads to experimentation behaviour (H4b) rather than a focus on affordable loss (H4a).

Hypothesis		Coefficient	Conclusion
H1	Crisis impact → Uncertainty	0.607***	Supported
H2	Crisis impact → Learning	0.412***	Supported
H3a	Uncertainty → Affordable loss	0.438***	Supported
H3b	Uncertainty → Experimentation	0.215 ⁺	-
H4a	Learning → Affordable loss	0.157 ⁺	-
H4b	Learning → Experimentation	0.511***	Supported

Table 2: Analysis results. ⁺: $p < 0.1$, *: $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

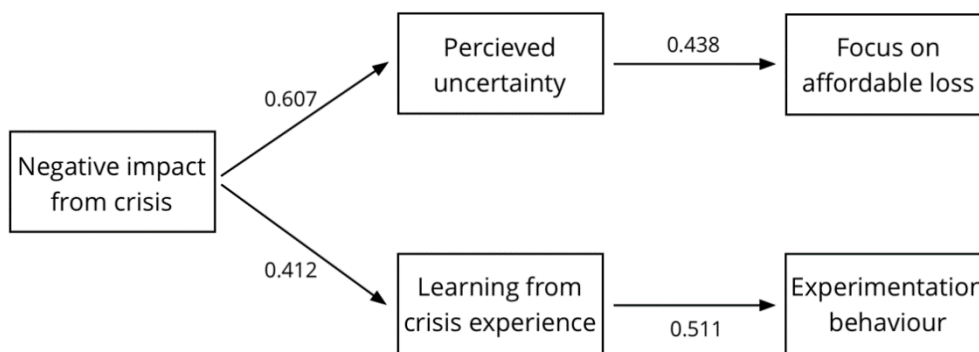


Figure 3: Resulting model with the statistically significant relationships. The coefficients are included. Relationships in the theoretical model (see Figure 1) that were not supported (those represented by H3b and H4a) are omitted here.

Discussion

Based on the qualitative criteria for model fit presented in the methods section, the model fits the empirical data well, even though this was a small-sample study. Grounded in a well-fit model, the results both support the findings of previous research and generate new insights about how SME managers respond to crises, such as the one induced by the COVID-19 pandemic.

The support for H1 confirms the expectation that there is a strong relationship between SMEs being impacted by the crisis and the managers' perceived uncertainty. This is in line with previous research specific for COVID-19 (Brown and Rocha, 2020; Ratten, 2020), as well as with the more general notions of managing small firms in challenging situations. Support for H2 confirms the expectation that there is also a strong relationship between experiencing the

crisis impact and the managers' learning from crisis experiences. Hence, the results of the present paper are in line with the basic premise of experiential learning (Kolb, 1984) and learning from critical events (Cope, 2003; Haneberg, 2019) or different types of failures (Cardon *et al.*, 2011; Cope, 2003). Central to the findings' nature is the crisis timeline as presented in Figure 2; the managers studied had experienced the impact of the COVID-19 crisis first in the spring and were then asked to reflect upon their learning when they faced the second 'wave' of impacts from the crisis later the same year. Thus, the present paper supports the notion that SME managers were going through a sensemaking process (Schwandt, 2005) that facilitated their learning between the two 'waves' of crisis impact. Findings for H1 and H2 strengthen the credibility of the present paper, as they confirm that the relationships expected in the literature are also found in this particular situation – the COVID-19 pandemic – and in the specific types of SMEs considered in the present paper.

Having established the two relationships hypothesised by H1 and H2 in the theoretical model, hypotheses H3a, H3b, H4a and H4b extend the present paper to show how SME managers behave as a result of being exposed to uncertainty and their learning from crisis experiences. The results for H3a are clear, in that perceived uncertainty primarily leads to the managers' focus on affordable loss. This is in line with previous research (Alsos *et al.*, 2016; Chandler *et al.*, 2011). Similarly, the results for H4b show a clear positive relationship between learning from crisis experiences and experimentation behaviour. This finding is in line with the fundamental notion that experience managing a small and/or nascent business promotes effectual decision-making (Sarasvathy, 2001) and with studies that show how learning promotes effectual behaviour (Haneberg, 2019). The relationships represented by H3b and H4a did not qualify according to the set $p < 0.05$ significance threshold. However, the found relationships are supported at a $p < 0.1$ significance level. Specifically, there is a positive relationship between the learning from crisis experience and a focus on affordable loss ($p = 0.55$) and between perceived uncertainty and experimentation behaviour ($p = 0.53$). The coefficients for these two relationships are much smaller (< 0.25) than for all the other relationships in the theoretical model (> 0.4). Thus, the results suggest that there are distinctions to be made in terms of the type of effectual behaviour by SME managers; perceived uncertainty primarily leads to a focus on affordable loss and learning from a crisis primarily leads to experimentation behaviour. This finding supports previous research suggesting that effectuation is a multifaceted concept (cf. Alsos *et al.*, 2016; Frese *et al.*, 2020) and provides novel insights into how different triggers – in this paper, uncertainty and learning – precede different dimensions of effectuation. The results shown in the present paper could be a result of how differing motives of the managers promote different effectual behaviours (Alsos *et al.*, 2016). There could also be individual personal differences in play, meaning that managers who tend to be involved in learning are also those who are more likely to experiment in their business. Regardless, the rationale for how uncertainty and learning lead to different effectual behaviours could be a topic for further investigation in qualitative studies.

This paper presents interesting insights from the perspective of business management in crisis situations. The results show that both uncertainty and learning are the results of crisis impact; uncertainty promotes the more reactive behaviour that a focus on affordable loss represents, while learning from a crisis promotes the more proactive behaviour that experimentation represents. Hence, the present paper adds to recent research on how SME managers handled

the COVID-19 pandemic (Haneberg, 2020; Thorgren and Williams, 2020) as well as other major crises in the past (Doern, 2016; Doern *et al.*, 2019). From a practical perspective, the COVID-19 situation may be so critical and challenging for many of the managers that they pursue reactive and protectionist responses rather than more proactive behaviours, even though they would have acted differently in a crisis of lower severity. Hence, the managers' behaviour may be a combination of rational action and impulsivity (Giones *et al.*, 2020). The present paper also addresses recent calls for how practitioners act in specific situations (Matalamäki, 2017) and contributes novel insight into how effectuation plays out in a real-world scenario (Read *et al.*, 2016).

Conclusion

The present paper aimed to address how SME managers responded in the second 'wave' of COVID-19, based on their perceived uncertainty as well as the eventual learning from the 'first wave' of the virus outbreak in the first half of 2020. Four hypotheses were developed, resulting in a theoretical model that related crisis impact, uncertainty, and learning from a crisis, as well as two dimensions of entrepreneurial effectuation, affordable loss and experimentation. The results show strong and significant relationships between the crisis impact and perceived uncertainty on the one hand and learning from the crisis on the other. Thus, the present paper contributes to the small business management field by empirically linking the impacts of a major crisis – such as COVID-19 – to perceived uncertainty and learning from experience, which are cornerstone concepts in the management and entrepreneurship literature. The results further show that uncertainty primarily leads to the managers' focus on affordable loss, while learning from a crisis primarily leads to experimentation behaviour. Through this, the present paper supports a multifaceted view on effectuation (Alsos *et al.*, 2016) and contributes empirical evidence to extend upon recent concepts and work (Frese *et al.*, 2020). It also reinforces the link between learning from experience and effectual behaviour (Haneberg, 2019; Politis, 2008), provides novel insights into SME managers' behaviour in crisis situations (Doern *et al.*, 2019) and empirically links crisis responses to learning and effectuation by studying a unique phenomenon: the two subsequent crisis 'waves' due to changing regulatory restrictions on business activities.

The present paper has implications for both research and practice. The results suggest that further studies on how SME managers respond to major crises should, to a larger degree, build on entrepreneurial effectuation as a conceptual lens, keeping in mind the different antecedents of effectual behaviour, such as the managers' perceived uncertainty and learning from crisis experiences. Further research should also investigate the mechanisms of learning in and from managing a firm during a major crisis to complement the existing focus on resilience, recognising that crises are often longitudinal events in which managers can change their behaviour along the way (cf. Lettieri *et al.*, 2009). The present paper suggests that managers' sensemaking and learning processes during a crisis should be promoted and facilitated to support the SMEs in surviving the crisis. Also, regional or national policies – such as those imposed to slow the growth of COVID-19 infections – must still allow for managers' experimentation with different options to sustain and grow their business, as well as provide clear regulatory frameworks and scenarios such that affordable loss can be evaluated by managers.

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