Tourism Management Modelling: What It Does and Does Not

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Abstract. The article presents a critical review of my past attempts in social phenomenon modelling. The review brings up issues embedded in positivist paradigm that are concerned with the cause-effect covering law based on purely events regularities, ontological conflation, and the symmetry principle of positivism i.e., explanation = prediction. Incorporating new realist thinking in contemporary philosophy of critical realism, practical solutions are suggested to overcome the issues, which encourage the use of mixed methods, analytical dualism, application of realist notion of causal laws, and that of not lawlike predictions.

Keywords: Causality; critical realism; modelling; positivism; prediction.

1. Introduction

In this paper, I will critically review two publications [1, 2] where I applied different statistical methods to data and generated models that explained the phenomena of my interests. All critiques lay on my own accountability, not the co-authors who are well established and respected scholars in their fields. The critiques derive from my doubts and struggles related to two questions: (1) 'was my approach good enough?' and (2) 'what would I do differently if I were to do modelling research again?' The problematization initiates further consideration on solutions in social phenomenon modelling studies.

2. Context

The two articles that I am revisiting are 'Influential factors of Internet users booking online in China's domestic tourism' by myself and Professor Dimitrio Buhalis [1] and 'Technology-mediated management learning in hospitality organisations' by myself, Dr Andy Lee, and Professor Rob Law [2]. The first paper was based on my research project for my MSc degree. In this empirical study, we examined a range of influential factors, and we employed logistic regression to generate a predictive model of online purchasing behaviours in the context of China's domestic tourism. This model achieved a fairly proficient level of Goodness-of-Fit (91.5%). The second paper was an extended adventure from my PhD thesis [3]. It examined the role of different information communication technology applications in management learning and development in hospitality businesses. We used multivariate analysis of variance to analyze data, which led to the generation of two models – model 1 / authentic social knowledge and model 2 / personal perspectives. The first model provided a Goodness-of-Fit of 72.6% while the second model promised 27.4%.

3. Was My Approach Good Enough?

In both papers, I took positivist approach. Subjects' experiences were quantified so that mathematical formulars could be arrived at to explain the regularities of the observations. Subjectivity must be kept out so that findings were not contaminated by subjective values; otherwise, the studies would not be deemed 'scientific'. This, however, gives rise to issues concerned with ontological conflation, epistemological fallacy, laws, and explanation versus prediction.

Let me start my critique by looking at the explanation powers of the models, which are stated in the previous section. The Goodness-of-Fit percentages of the models do not suggest their power capable of explaining all the variances observed and a full/strong power to predict future event

regularities. Now, the immediate question is 'what should we do with those that were observed but did not fall in the normal distribution bell and those that are not observed in the dataset?'. For the former, it is relatively straightforward: we treat them as outliers - these abnormalities are disregarded and forgotten. The latter has been historically dealt with by following Plato's edict 2500 years ago that we should not research 'what is not' [4]. In short, the models in the studies [1, 2] were not good enough because they have failed to explain all the variances if we follow Hume's events regularity or the covering law [5] and thus they have failed to provide prediction if we accept the positivist symmetry between explanation and prediction [6]. I will return to these two points later.

In fact, it is problematic to use 'explain' when I refer to the function of the models [1, 2]. These models show the correlations between variables but do not actually provide any meaningful explanation of the cause-effect relationship. We often can predict what is going to happen next without being able to explain why and we can sometimes explain why but are not able to predict what is going to happen in the future e.g., climate change. In my second study [2], I claimed 'the first function ... identifies that managers used company intranet, ... when they need written authentic knowledge most ad people's insight least' (p. 455). But, why? I could not explain. Such an explanatory effort will require qualitative descriptions instead of statistical measurements. What if a company intranet is not available to the managers?

Positivist research, following Hume's theory of causality i.e. events regularity or covering law [5], aims to find universal causal laws that allow us to predict future. The covering laws basically follows the logic that if A probability α then B. As I stated in the second study [2], 'Holding other variables constant, one unit increase in "if I heard that a new travel website ... results in increased odds by 1.68 times' (p. 183). We can hold all other variables constant in laboratory, but not in the real world. We simply cannot switch off the rest of the world while changing only one variable. The world is open and is always causally open [5], which makes prediction of future literally impossible. Quoting Professor Tony Lawson's words in an interview printed in the Cambridge Journal of Economics:

I think that if forty years of econometrics has revealed anything of value to us it is that you cannot very often make successful predictions ... Despite the claims of some econometricians, most results they achieve are pretty useless. Anyone can run millions of regression with a set of data and report a result that seems to pass all tests ... But even with sch results we find that as soon as new data come along the previously reported results or models typically break-down. [7, p. 106]

4. What Would I Do Differently?

The aforesaid critique is not to say that positivist research is a no-go territory. In fact, deductive reasoning in positivist research has its scientific merit – focusing on observable facts. Generated models can provide some ground for identifying possible mechanisms that are in play and thus providing some indicative directions for policy making and strategic planning in many fields such as tourism. However, it is important to recognize the shortcomings that come with positivist thinking.

First, causality as conceptualized as events regularity is inadequate. Correlation only tells us the regularity of events concurrence. A statistically significant correlation may indicate there is some sort of mechanism(s) in play. To reveal them, we need to identify real causes, i.e. internal structure and properties of entities that causes the effects, which can include, such as people's motivations, emotions, intuition, and reflexivity, which fall under the umbrella of subjectivity.

Second, I will be very careful not to commit to any ontological conflations [8, 9] and epistemic fallacy [5]. In the first paper [1], I attached educational attainment, household monthly income and some other variables around the subject, but these variables are concerned with the structure of the system. If they have any causal powers, they need to be looked at separately from the individuals. By subordinating structural factors under agency, respective coefficient readings can be misleading

their real causal powers. The same error has also occurred in the second paper [2] where management knowledge was conceptualized in 16 items. Among them was 'written authentic information, which was operationalized as 'I used the application to locate authentic written information that I must take into consideration before I decide on a course of action, such as legislation and company policies.' In that, legislation and company policies are 'sayings' of culture at the structure level [9]. This saying was aligned with 'authentic' knowing in the paper [2] which is subjective in nature. In other words, the meanings of 'legislation and company policies' were conflated with the sayings of legislation and company policies i.e. I subordinated structural casual properties under individuals. Any ontological conflations prevent any development of sound explanation of social formation [8, 9]. To overcome ontological conflation, I will employ analytical dualism – separating structure and agency analytically. This calls for utilization of methods that are appropriate for factual and objective elements of reality, and methods appropriate for evaluative and subjective elements of reality.

Third, I will be more careful with prediction. In both studies [1, 2], the interpretations of statistical analysis were expressed in a manner that the correlations were the explanation for the future social behaviours under investigation. As said before, what if a company intranet is not available? And, what if legislative information becomes one key feature of social media platforms in the future? Things change constantly in the real world. The symmetry principle of positivism that endorses prediction just in future tense [6] is to be denied. This is, however, not to say that we should deny prediction.

Many critical realists follow Bhaskar [10] and argue that the world outside the laboratory is a causally open system wherein all sorts of forces acting on each other, accelerating or counteracting one another, or not acting but holding the potential to cause effects, at different times; therefore, positivists will not be able to find any invariant regularities (although there are few laws of universal invariant regularities). Lawson's words quoted above have clearly shown the unsuccessful attempts in economics. However, Petter Næss [11] makes a somehow valid point that there are varying degrees of openness or closure of system that allow some sorts of prediction. As Morgan [12] puts it, in relation to climate change, there is a demi-regularity between economic growth and carbon emissions, and this results in a general tendency or effect; thus, Morgan believes that itis still possible to be reasonably confident to foresee the trajectory of travel of underlying causal mechanisms (p. 306-307).

Thus, the ways to overcome the symmetry between explanation and prediction in positivism, according to Porpora [6] are to abandon the idea of covering laws. Instead, we are to accept that what governs are the causal powers of mechanisms or of conjunctures of mechanisms. Regularities are to predict what will happen if the operating mechanisms stay in place without being interfered with. That is, 'prediction is not a lawlike deduction' [6, p. 111], but is to provide what we need to act upon [7]. Taking climate change as an example again, the regularity between the level of economic activities and climate change suggests some dominant mechanisms in play i.e., competition laws in capitalism and greenhouse effect. This regularity provides a strong prediction – one that we need to act on [6, 11]. Phenomenon modelling should only provide reliable but not lawlike predictions about the world and the consequences of our own actions in it, which is conditioned by our ability to do so purposively which reminds us of the philosophical position of critical realism that the world has both objective and subjective elements and that structures condition, as well as depend on (especially the social world), human actions [10].

5. Conclusion

In this paper, I reviewed my past attempts at modelling social phenomena. I questioned whether my adopted approach was good enough or not. It became clear it was not. I then discussed what I would do differently. Incorporating critical realist philosophical positions and concepts, I argued that the critical realist conceptualization of causality and prediction are worth of thoughtful

consideration for researchers who are interested in social phenomenon modelling studies. In short, the review and critique have led to promotion of mixed methods approach, analytical dualism, the realist notion of causal laws, and that of not lawlike prediction in modelling social phenomena.

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