A formal model for assessing the economic impact of animal welfare improvements at bovine and porcine slaughter

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Abstract

The relationship between animal welfare at slaughter and slaughterhouse profitability is complex, with potential trade-offs between animal welfare costs and benefits. Slaughterhouses currently lack data support for decisions on investments that can improve both animal welfare and profitability. Therefore, this study mapped the economic impacts for slaughterhouse businesses of improved cattle and pig welfare at slaughter. Specific aims were to: (i) highlight the possible economic impact of animal welfare improvements, based on the scientific literature; (ii) develop an economic model demonstrating the theoretical contribution of animal welfare to slaughterhouse profitability; and (iii) validate the economic model through focus group interviews with slaughterhouse personnel in Sweden. The findings indicated that investing in animal welfare improvements could result in accumulation of an intangible asset that can be considered together with other production factors in the economic model. Model validation stressed the importance of selling by-products for the economic outcome and of smooth workflow for productivity. The study thus improves understanding of the economic impacts of animal welfare at slaughter and incentives for slaughterhouse businesses to improve animal welfare. The results are important for public and private policy-makers interested in enhancing animal welfare at slaughter.

Keywords: abattoir, animal welfare, cattle, economic impact, pigs, profitability

Introduction

There is considerable public interest in the welfare of farm animals in general and in the handling of animals at slaughterhouses in particular (Fernandes et al 2021). Therefore, many food chain actors (including slaughterhouse workers) are striving to improve the welfare of farm animals. Since consumption of beef and pork worldwide is expected to increase with a growing and increasingly wealthy global population, it is highly relevant to ensure acceptable welfare standards for animals produced for meat (Alexandratos & Bruinsma 2012). Animal welfare is defined by Fraser et al (1997) as the subjective experience of the animal and its biological functioning and adaptation to its current environment, and it includes all parts of an animal’s life. Improving animal welfare means ensuring good living conditions for farm animals during their life and at slaughterhouse level, with the latter often requiring alterations to infrastructure such as avoiding slippery flooring or high-pitched motor noises (Grandin 2000), or training personnel in animal welfare-friendly stunning methods (Leary et al 2013). There is a considerable body of literature about the links between pre-slaughter stress, animal handling and meat quality (Costa et al 2006; Chulayo & Muchenje 2015), but the economic consequences for slaughterhouses of impaired welfare practices pre-slaughter are less well explored. The relationship between animal welfare at slaughter and production costs is complex, with some costs being obvious and others challenging to evaluate using econometric methods. There is concern that increased animal welfare could be linked to higher production costs, leading to impaired competitiveness at farm and slaughterhouse level. Recent studies have considered the relationship between animal welfare and economic outcomes at farm level, focusing on pig production (Alvåsen et al 2017; Henningsen et al 2018) and beef fattening operations (Ahmed et al 2020). Other studies have indicated, but not verified, interactions between animal welfare at slaughter and slaughterhouse profitability (McInerney 2004; Gibson & Jackson 2017). At the same time, there is an ongoing debate about animal welfare at slaughter and the potential trade-offs between costs and benefits (Fernandes et al 2021). It is important for the slaughter sector to understand the economic consequences of improved animal welfare since it can aid their decision-making. However, there is a