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Analysis of Dark AI Patterns Manipulation Vulnerability Levels in the E-Commerce Environment

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Abstract:

Purpose: *The study aims to examine the levels of consumer susceptibility to Dark AI Patterns in the e-commerce environment and to identify the psychological and behavioral factors that shape this vulnerability.*
Design/Methodology/Approach: *The research was conducted using an online survey carried out in 2025 on a sample of 429 respondents, measuring their responses to algorithmic pressure techniques such as scarcity cues, countdown timers, social proof, and AI-driven recommendations.*
Findings: *The results indicate a moderate and relatively uniform susceptibility to Dark AI Patterns, with higher personalization and trust in AI increasing vulnerability, while greater algorithmic awareness plays a protective role.*
Practical Implications: *The study highlights the need for responsible design of AI-enhanced interfaces, emphasizing transparency, limitation of manipulative cues, and support for users' informed decision-making.*
Originality/Value: *The article provides one of the first empirical assessments of consumer susceptibility to AI-driven manipulative design, offering insights relevant for researchers, practitioners, and regulators shaping the future of ethical e-commerce.*

Keywords: *Dark AI, e-commerce, manipulation vulnerabilities, artificial intelligence, trade*

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1. Introduction

The modern e-commerce environment is undergoing dynamic transformations. Systems based on artificial intelligence play a growing role here. These technologies enable increasingly advanced forms of personalization, prediction and automation of purchasing processes. On the one hand, this is conducive to increasing the convenience of users, and on the other hand, it creates conditions for the use of manipulation techniques of a nature that is difficult to notice.

The literature points out that the phenomenon of digital manipulation has ceased to be limited to simple design procedures, such as hiding important functions or inducing time pressure, and has begun to take the form of dynamic patterns that adapt their actions to the individual characteristics and behaviors of the user.

This type of manipulation, referred to as Dark AI Patterns, combines classic hidden persuasion techniques with an algorithmic model of influence. The latter enhances their effectiveness with its ability to process data and predict consumer decisions.

This phenomenon becomes particularly important from the point of view of research on consumer behavior. It should be noted that it leads to a gradual limitation of user autonomy and blurs the line between the decision-making process and the process of their design by AI systems. In the context of the growing use of algorithmic technologies in the e-commerce sector, there is a need to understand how users react to messages based on time pressure, artificially generated scarcity, social evidence or automatically generated recommendation suggestions.

Therefore, the key research problem is to determine what factors determine the susceptibility of consumers to this type of impact and to what extent AI-based mechanisms modify the way of making decisions in the digital environment.

This article adds value at both cognitive and application levels. First, it presents an empirical analysis of the levels of vulnerability to manipulation such as Dark AI Patterns. Here, it is based on data from a wide and diverse sample of e-commerce users. Secondly, it allows you to identify psychological and behavioral characteristics.

They are conducive to succumbing to algorithmic forms of pressure, as well as those that have a protective function. Thirdly, the results make it possible to indicate

practical consequences for the design of procurement systems and for organizational policies in the field of responsible use of artificial intelligence.

Taking up the topic is also justified by the growing interest of regulators. They strive to reduce the use of manipulative forms of design, which may change the functioning of e-commerce platforms on a global scale in the coming years.

2. Literature Review

2.1 Dark AI Patterns in the E-commerce Environment - Literature Approach

Dark AI Patterns manipulations in the e-commerce environment can be considered a key challenge of the modern digital economy. These manipulations combine the features of classic dark patterns with the possibilities offered by algorithmic systems. The literature emphasizes that these practices are evolutionary in nature.

This means that they were initially based on designing interfaces that were conducive to impulsive decisions, but with the development of artificial intelligence, they began to take on more precise and more difficult to detect forms. This is because they are dynamically adjusted to the user's behavior. A comprehensive review of research on digital manipulation and persuasion in the shopping environment indicates that contemporary dark patterns should be understood more broadly than just technical tools.

After all, these are elements of business strategies focused on maximizing short-term profit at the expense of user autonomy (Singh, Vishvakarma, and Kumar, 2024). Similar conclusions can be drawn from the analysis of taxonomics and typologies of dark patterns. In them, attention can be drawn to the ever-increasing number of their variations and to the interpenetration of visual, textual and algorithmic layers (Kollmer and Eckhardt, 2023; Nazarov and Baimukhambetov, 2022).

Artificial intelligence gives particular dynamism to the phenomenon. It enhances the manipulative potential of interfaces through personalization, prediction, and automatic adaptation of the message. User experience design studies indicate that automated dark patterns use machine learning mechanisms to create messages that increase buying pressure. This, in turn, results in a more difficult form of pressure to grasp than in traditional interfaces (Spasovski and Jönsson, 2025).

A similar view is presented by Xu and Al-Mashahedi (2025). They point out that the integration of recommendation systems with manipulative design mechanisms creates an environment referred to as "deceptive by design", in which the user is unable to unambiguously distinguish between neutral content and AI-generated persuasive content. The importance of this phenomenon is also emphasized in the literature on the dark side of digital marketing, where it is noted that artificial intelligence expands the possibilities of manipulation both on a cognitive and

physiological level. It affects users' emotions and behavioral responses in real-time (Redwan, 2025).

In research focusing on e-commerce, it is emphasized that the most commonly used manipulations concern artificially limiting the availability of products, aggressive price dynamics, the use of countdown counters and recommendations built on social proof. Empirical analyses confirm that such mechanisms are among the most important patterns of manipulation.

This is evidenced by the results of research on the hierarchization of dark patterns in e-commerce using an analytical hierarchical process (Singh, Vishvakarma, Mal, and Kumar, 2024). In the works devoted to the motivations of enterprises, however, it is indicated that the use of manipulative techniques is based on agency logic, in which the interest of the company prevails over the interest of the user.

This procedure promotes the design of interfaces that reinforce information asymmetry (Singh, Vishvakarma, and Kumar, 2025). At the same time, the analysis of factors conducive to the dissemination of dark patterns indicates that their use is conditioned by both economic attractiveness and the readiness of organizations to use behavioral data on the border of ethics (Singh, Vishvakarma, and Kumar, 2024).

A significant stream of research remains proposals for the identification and detection of dark patterns, which emphasize the potential of large-scale language models for detecting manipulative textual and visual content. Research using LLMs, i.e., advanced AI models trained on huge data sets, capable of analyzing and generating natural language and interpreting more complex communication structures, shows that these tools can support the identification of hard-to-notice manipulative elements, such as structured persuasive messages, graphic abuse, or asymmetric presentation of information (Yekeh, 2024).

At the same time, the possibility of using AI systems to both generate manipulations and eliminate them through appropriate prompt design and interface creation paradigms is indicated (Quijada and Serezlic, 2025). This opens up a discussion about the potential of AI technology as both a manipulative and protective tool (Prokopowicz, 2024).

A significant complement is the research on the social and psychological contexts in which dark patterns operate. It is indicated that algorithmic manipulations are particularly visible in the social commerce environment. In this space, commercial messages merge with the practices of social platforms, amplifying pressure through emotional and social stimuli (Yadav and Chhatiya, 2025).

Behavioral analyses also note that susceptibility to manipulation can vary depending on gender, digital experience, or the way online recommendations and opinions are interpreted. This is supported by research on shopping platform users (Ullah, 2025).

Of significant importance are also studies pointing to the erosion of consumer autonomy as a result of the cumulative action of algorithmic manipulations, which systematically limit the user's ability to make independent decisions (Kumar *et al.,* 2025).

The legal and regulatory dimension also remains an increasingly clear area of interest. Comparative analyses show that existing regulations often do not keep up with the pace of development of AI systems, leaving a significant area unregulated. It is in this area that manipulative practices can develop without real restrictions (Raj, Nanda, and Noorani, 2025; Chauhan and Anupriya, 2025).

There is an argument in the legal literature that dark design patterns exacerbate the power asymmetry between the user and the platform, and their automation with AI makes them more difficult to detect and enforce within the existing legal framework (Leiser, 2025). This shot is in harmony with the concept of "AI-empowered dark patterns". According to it, the reinforcement of manipulation by machine learning tools represents a qualitative change in the way the user is affected (Kitkowska, 2025).

Finally, there are attempts in the literature to understand the mechanisms of consumer susceptibility to manipulation. This can be seen as an attempt to build a theoretical framework that integrates psychological, behavioral, and technological approaches (Schilling and Sergeeva, 2025; Deligöz, 2025). It is indicated that algorithmic manipulations operate at the intersection of three areas: user experience design, data processing and decision automation.

Therefore, studying their nature requires a multidisciplinary approach that takes into account both the logic of the algorithms and the different responses of users depending on the digital context.

3. Methods and Materials

3.1 Methods

On the basis of the conducted research, this part of the article indicates the purpose of the study, the research hypothesis and the research questions. The survey was conducted using an online survey conducted in 2025 on a sample of 429 respondents who met the participation criteria (making online purchases in the last three months).

The aim of the study focused on identifying and analysing the levels of consumer vulnerability to Dark AI Patterns manipulation in the e-commerce environment. The study aimed to determine the extent to which online store users react to algorithmic forms of pressure, such as messages about limited product availability, timers, dynamic promotions or recommendations based on behavioral data. In accordance with the theoretical assumptions, it was also sought to analyze whether the

characteristics related to the perception of algorithms, trust in AI, awareness of personalization and the intensity of contact with technologies affect the level of susceptibility to these forms of influence.

On the basis of these assumptions, the main research question was formulated on what is the level of vulnerability of consumers to manipulations such as Dark AI Patterns in e-commerce and what factors determine the severity of this vulnerability.

As part of its detail, questions were posed relating, among other things, to how respondents react to messages about limited product availability, how they perceive recommendations generated by AI systems, to what extent they are aware of the operation of algorithms, and whether they declare greater purchasing impulsiveness in a situation of pressure caused by algorithmic mechanisms.

With regard to the theoretical assumptions adopted, a research hypothesis was also derived. It was found that susceptibility to manipulation such as Dark AI Patterns is dependent on selected psychological and behavioral variables related to the functioning of the consumer in the digital environment. It was assumed that a higher perception of personalization and a higher level of trust in AI systems increase the likelihood of succumbing to these manipulations, while greater awareness of algorithms act in a protective way and reduce vulnerability.

The hypothesis also emphasizes that higher susceptibility to algorithmic manipulation is associated with greater purchasing impulsiveness, and exposure to purchasing pressure and frequent use of AI-generated product recommendations intensify consumer susceptibility. The construction of the hypothesis thus reflected the complexity of the phenomenon, combining the psychological mechanisms of perception of AI messages with real buying behavior.

3.2 Results

In the course of the research, sociodemographic data were obtained to characterize the structure of the research sample in detail. In terms of gender variability, women predominated, who constituted the largest part of respondents, while men constituted the second largest group. A small percentage of people declared a different gender identity or did not want to reveal it. However, this fact did not have a significant impact on the overall structure of the sample.

The age of the respondents ranged from 18 to 70 years, with an average age of 33.54 years. This indicates the dominance of working-age adults. The age distribution varied, with quartile values indicating that a quarter of participants were 23 years of age or younger, half were under 30 years of age, while the top quartile included people in their forties and older. These data indicate the presence of both younger e-commerce users and representatives of older age groups.

The level of education turned out to be diverse, but people with secondary education dominated. A significant group were also respondents with first-cycle tertiary education, and second-cycle tertiary education was represented by another, smaller part of the sample. The least numerous were groups of people with primary education and participants in doctoral studies.

As far as professional status is concerned, the largest part of the sample were full-time employees. The second largest group were pupils and students. This corresponds to the presence of young people in the age structure. To a lesser extent, the self-employed, the unemployed and pensioners, who together constituted a relatively small part of the research population, were represented.

Declared monthly income also showed significant variation. The largest group were people earning between PLN 2000-3999, and a significant part of the sample were also people earning between PLN 4000 and 5999. Lower incomes below PLN 2000 were represented by a smaller group, as well as higher incomes in the range of PLN 6000-7999.

The fewest people declared income exceeding PLN 8000 per month, and some respondents did not provide information about the amount of income. The totality of the presented data indicates that the sociodemographic structure of the sample varied in terms of age, education, professional status and income, with young and middle-aged people, professionally active and those with secondary or tertiary education playing a dominant role.

Table 1. *Average level of vulnerability to Dark AI Patterns manipulation*

Indicator (Block 3)	**Question description**	**Average (1-5)**
Q7 - Vulnerability 1	Succumbing to messages like "last pieces"	3.01
Q8 - Vulnerability 2	Speeding up decisions by decreasing product count	2.98
Q9 -Vulnerability 3	The impact of information about other customers' behavior	3.00
Q10 - Vulnerability 4	The impact of timed promotions on the decision	3.01
Q11 - Vulnerability 5	Timer pressure	3.00
Q12 - Vulnerability 6	Bias to buy quickly without a second thought	2.99

Source: *Own study based on research.*

The study sought to determine the extent to which respondents are vulnerable to Dark AI Patterns manipulation by focusing on six key indicators that include responses to common algorithmic pressure techniques used in the online shopping environment.

The obtained mean values for individual variables indicate a moderate level of sensitivity to these forms of influence, with each element constituting this susceptibility taking on a slightly different character.

In the case of the Q7 indicator, referring to succumbing to messages such as "last pieces", an average of 3.01 was recorded. This result suggests that messages referring to limited product availability are noticed and to some extent influence purchasing decisions, but their impact does not reach extreme values.

A similar level of intensity is observed in the case of the Q8 indicator, which measures the response to the decreasing number of available units. An average of 2.98 indicates that signals about decreasing resources also affect respondents, although they are received slightly less than messages about "last pieces".

The Q9 indicator, referring to the impact of other customers' behaviour on purchasing decisions, reached a value of 3.00. This means that suggestions based on social proofs – such as information that other users have purchased a product – affect respondents to a comparable extent as other pressure techniques. A slightly higher result was recorded in the case of the Q10 indicator, concerning the impact of temporary promotions, where the average was 3.01. This indicates a stable and comparable impact of time-constraint mechanisms.

The Q11 indicator, which includes the sense of pressure caused by the timer, remained at 3.00. A consistent pattern of moderate susceptibility to visual countdown signals can be pointed out. The lowest, although still similar to the others, value was recorded in the Q12 indicator, which measures the tendency to make quick purchasing decisions without thinking. The obtained average of 2.99 suggests that impulse buying caused by algorithmic pressure is present, but slightly less pronounced than other forms of manipulation.

The presented results of the research indicate an even distribution of responses within all six analyzed indicators, without significant deviations or extreme values, which confirms the stable and consistent nature of the declared susceptibility to the techniques used.

The analysis of the data presented in Table 1 indicates a moderate and relatively uniform level of respondents' susceptibility to Dark AI Patterns manipulation in the e-commerce environment. The mean values of all analyzed indicators are close to the midpoint of the scale, suggesting that time pressure, messages about limited product availability, and stimuli based on social proof exert a comparable influence on purchasing decisions. The absence of significant differences between individual mechanisms implies that algorithmic pressure techniques are perceived as a coherent set of stimuli affecting consumers, rather than as isolated or independent forms of manipulation.

3.3 Discussion

The conclusions of the research indicate that respondents show a moderate level of susceptibility to manipulations such as Dark AI Patterns used in the e-commerce

environment. Messages related to time pressure, limited availability of products or suggestions based on the behavior of other users evoke a similar level of reaction in the respondents, indicating the fact that various forms of algorithmic influence are perceived in a relatively uniform way.

It is worth noting that none of the analyzed indicators stood out with a significantly higher or lower level of vulnerability. Thus, these techniques constitute a coherent set of stimuli influencing purchasing decisions.

The results clearly show that the more consumers feel the personalization of messages generated by AI systems, the more they are willing to succumb to messages such as "last pieces", "a few minutes left" or recommendations based on the behavior of other users.

Personalization therefore increases the credibility of messages and weakens the vigilance of recipients. A similar relationship is observed in the case of trust in technology. People who perceive AI systems as acting in their interest are more likely to succumb to the pressure caused by algorithmic content.

The relationship regarding the awareness of algorithms is of a different nature. With the increase in knowledge about how recommendation systems work and what mechanisms are behind the messages displayed in online stores, the susceptibility to manipulation is clearly decreasing. Awareness therefore plays the role of a protective factor, reducing the impact of persuasive techniques used in the digital shopping environment.

The results of the research also confirm that susceptibility to algorithmic manipulation is associated with purchasing impulsiveness. People who are more likely to succumb to pressure caused by messages about limited availability or countdown timer are also more likely to make spontaneous purchases. This relationship is further reinforced by a general sense of buying pressure. It works in such a way that the stronger the pressure to make a quick decision, the greater the tendency to act impulsively.

The intensity of the use of AI-based tools is also important. Those who often reach for product recommendations, buy goods suggested as "for you" or regularly use chatbots are more likely to declare their vulnerability to messages based on Dark AI Patterns mechanisms. It can be assumed that frequent exposure to personalized content gradually weakens criticism. And it also leads to automatic message processing.

To sum up, the presented research results show that algorithmic manipulations used in e-commerce have a clear impact on users. However, the impact is moderate. This effectiveness depends on factors related to perception and trust in technology, as well as the level of knowledge about how algorithms work, the overall sense of

buying pressure, and the frequency of contact with AI tools. These results confirm that Dark AI Patterns are a real element of the modern shopping environment, and their impact is worth analyzing in both psychological and technological contexts.

4. Conclusion

Based on the results obtained, recommendations can be formulated for companies operating in the e-commerce area. They determine the directions of responsible use of tools based on artificial intelligence. Data analysis shows that manipulative forms of influence, although effective in the short term, lead to building relationships based on pressure and momentary impulsiveness, rather than on permanent trust capital. For this reason, it becomes reasonable to develop practices aimed at transparency, balance of incentives and strengthening the conscious participation of users in the purchasing process.

In the light of the results, it is worth considering limiting the use of messages based on time pressure and artificial scarcity, especially in situations where they have no real justification. Research shows that these types of techniques affect consumers. In addition, they simultaneously reduce control over the decision and promote impulsivity, leading to a sense of dissonance after the purchase. Instead of intensifying the pressure, it may be more beneficial to build a message based on reliability, predictability and realistic parameters of the offer.

The transparency of algorithms is also of great importance. Respondents with a higher level of awareness of the functioning of recommendation systems showed less susceptibility to manipulation. This shows that user education does not have to weaken sales effectiveness, but can contribute to a more mature and lasting relationship with the customer. For this reason, it is advisable to introduce clear messages about how recommendations are generated, content matching criteria and personalization rules.

The relationship between trust in AI systems and susceptibility to manipulation requires special caution. The results suggest that high consumer trust may encourage them to take messages uncritically. This gives rise to a responsibility on the part of companies in terms of the proper use of this trust. Building a long-term reputation requires that recommendations and personalized content are supportive, not exploitative of users' sensitivity to algorithmic stimuli.

On the other hand, observations of frequent exposure to AI technologies show that intense exposure to personalized content can gradually weaken consumers' vigilance. For this reason, it is worth designing interfaces in a way that prevents the automation of user behavior, including by providing feedback, enabling verification of sources and introducing elements that support reflection in the purchasing process.

Companies that skillfully combine personalization with respect for the autonomy of the recipient build a competitive advantage based on credibility, not only on the power of algorithms.

In addition, the results of the research indicate that responsible management of AI technologies in e-commerce should focus on creating a shopping environment that supports informed customer decisions, and at the same time enables the effective use of data and personalization mechanisms. Moderation in the use of persuasive techniques, transparency in the operation of systems and providing users with tools that increase their information competences promote building valuable and lasting relationships between the company and the customer.

In future research, it seems reasonable to deepen the analysis of the mechanisms behind susceptibility to algorithmic manipulation, especially by taking into account psychological variables related to emotion regulation, cognitive resilience and decision-making style under information pressure.

It is also worth paying attention to comparisons between different demographics and cultures to better understand which consumer segments are most vulnerable to Dark AI Patterns and for what reasons.

An important direction of research development is also the analysis of the long-term effects of exposure to algorithmic forms of pressure, both in terms of changes in shopping behavior and the level of trust in technology. The regulatory context is also becoming increasingly important, especially in light of international debates on limiting the use of dark patterns in the digital environment.

Such areas can open up space for research on how regulations affect companies' strategies and consumer responses. In addition, there is a growing need for experimental research that will allow to precisely measure cause-and-effect relationships between specific types of algorithmic messages and user decisions, as well as to compare the effectiveness of individual manipulation patterns in different purchasing contexts.

5. Limitations

The conducted is subject to several limitations that should be taken into account when interpreting the results. The use of the survey method allows for the collection of data from a large group of respondents, however, it is based on self-declarations, which may be prone to distortions resulting from memory, self-presentation or difficulties in assessing one's own responses to algorithmic stimuli.

The research sample, although diverse, does not fully reflect the structure of the e-commerce user population. This certainly limits the possibilities of generalizing the results.

An additional limitation is the nature of the measurement of susceptibility to manipulation, which was based on the assessment of hypothetical situations and subjective feelings of respondents, rather than on the observation of real purchasing behavior.

Differences resulting from technological experience or the context of the device on which purchases are made have also not been analysed, although these factors may affect the way AI-generated messages are received.

In addition, the study was cross-sectional, making it difficult to capture changes over time and their relationship with the growing presence of algorithmic technologies in the procurement environment.

6. Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References:

Chauhan, K.D.S., Anupriya. 2025. Darker patterns? AI-generated persuasion and the regulatory void in Indian law. Journal of Development Policy and Practice, 10(1), 80-95.

Deligöz, K. 2025. Consumer Manipulation With Artificial Intelligence: Dark Patterns and Hidden Techniques.

Kitkowska, A. 2025. The AI-empowered dark patterns. In: Handbook of Service Experience (pp. 257-270). Edward Elgar Publishing.

Kollmer, T., Eckhardt, A. 2023. Dark patterns. Business & information systems engineering, 65(2), 201-208.

Kumar, P., Singh Dadwal, S., Modi, S., Ghouri, A.M., Jahankhani, H. 2025. Dark Patterns and the Erosion of Consumer Autonomy. The Dark Side of Marketing: Technology, Consumer Autonomy and Recuperative Marketing, 169-194.

Leiser, M. 2025. Dark Patterns, Deceptive Design, and the Law: AI's Hidden Influence on Our Digital Experience. Bloomsbury Publishing.

Nazarov, D., Baimukhambetov, Y. 2022. Clustering of dark patterns in the user interfaces of websites and online trading portals (E-Commerce). Mathematics, 10(18), 3219.

Quijada, O., Serezlic, T. 2025. Can AI avoid Deceptive Design? Investigating the Effectiveness of Prompting AI to Prevent Dark Patterns in Web Design.

Prokopowicz, D., Matosek, M. 2024. The concept of managing the development of artificial intelligence technology based on the premise of reducing the threat of potential rebellion of intelligent machines. International Journal of Legal Studies, 2(18), 191-222.

Raj, P., Nanda, S.S., Noorani, M. 2025. Safeguarding the Digital Consumer: A Comparative Legal and Psychological Analysis of Dark Patterns in E-Commerce. Advances in Consumer Research, 2(4), 3567-3574.

Redwan, M.R. 2025. The dark side of AI in marketing: Physiological manipulation or enhanced consumer experience. Journal of Tianjin University Science and Technology, 58(08).

Schilling, T., Sergeeva, A. 2025. Dark Patterns to Nudge Them All? A development of a theoretical framework and an experimental examination of individuals' susceptibility to dark patterns in e-commerce. A development of a theoretical framework and an experimental examination of individuals' susceptibility to dark patterns in e-commerce.

Singh, V., Vishvakarma, N.K., Kumar, V. 2024. Tracing the origins of manipulation: modeling the enablers behind dark patterns usage in e-commerce through TISM and MICMAC analysis. Global Knowledge, Memory and Communication.

Spasovski, M., Jönsson, O. 2025. Automated “Dark Patterns” in User Experience (UX): Exploring AI-Driven Manipulative Design.

Ullah, S. 2025. Dark patterns, online reviews, and gender: a behavioural analysis of consumer decision making on TEMU in the e-commerce context (Master's thesis, S. Ullah).

Xu, A., Al-Mashahedi, H. 2025. Deceptive by Design: AI-enhanced Dark Patterns in E-Commerce UX.

Yadav, H., Chhatiya, A. 2025. Scroll, Buy, Manipulate: The Dark Side of Social Media Concerning E-Commerce. Available at SSRN 5315304.

Yekeh, M. 2024. Detecting Textual and Visual Dark Patterns Using a Large Language Model in E-Commerce (Doctoral dissertation, Concordia University).