

*Full Length Research Paper*

# **Does mobile technology increase the diversity of news? A content analysis of news notifications on mobile phones**

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**Through conducting a content analysis of news notifications on the mobile media platform, the current study mainly finds that 1) no agenda correlation exists among legacy media outlets; 2) an agenda correlation is found between non-legacy media outlets and legacy media outlets; 3) in terms of news pushing frequencies, non-legacy media outlets, and legacy media outlets share different news pushing patterns on the mobile media platform. Both theoretical and practical implications are further discussed.**

**Key words:** Mobile media, intermedia agenda setting, agenda correlation, legacy media outlets, non-legacy media outlets.

## **INTRODUCTION**

Based on a recent report, as of February 2018, 77% of American adults have a smartphone and 53% of American adults own a tablet computer (Pew Research, 2018a). As the prevalence of mobile media grows, an increasing number of American adults prefer to consume news on mobile devices. According to Pew Research (2018b), 88% of Americans get news on a mobile device. This trend indicates that mobile devices are gradually becoming one of the main sources for American adults to obtain and gather news.

Using mobile applications is one of the most convenient ways for audiences to obtain news and gather information from their mobile devices. If the users enable the news applications to push notifications to their smartphones, they can receive the news notifications sent out by the news apps. News notifications are short descriptions of

the news stories. The most prominent function of news notifications is to allow users to obtain immediate information about what is happening around the world. This phenomenon is consistent with the concept “ambient news” proposed by Hermida (2010), emphasizing the ubiquity of news for consumers.

The development of mobile media in today's information explosion era seems to deliver a message to the audiences, that is, “you are exposed to the sea of information, and you can obtain, choose and read all different kinds of news.” Audiences tend to receive this message, perceiving that the mobile media enables them to gather information from more and various sources, leading them to utilize the information to change or exert some certain impacts on their communities (Purcell et al., 2011; Napoli and Obar, 2014).

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However, do the audiences receive diversified information? Do the mobile media contribute to the diversity of information distribution? Or do the mobile media strengthen the unsettling paradox in mass communication proposed by Johnson (1996), “the more information we have, the less we know” (p. 213)? Also, according to Newman (2016), the amount of smartphone users who turn on the function of news notification has tripled in many countries including the US, UK and Germany, and the news organizations have kept increasing their volume of news notifications on mobile phones. No current study has investigated news notifications on smartphones. Thus, the current study aims to explore and analyze these series of media problems by employing two theoretical approaches and empirical research.

## LITERATURE REVIEW

### Intermedia agenda setting

Agenda setting theory, in its initial stage, refers to the strong correlation between the issues covered in the mass media and the public perception that those issues are important in their lives (McCombs and Shaw, 1972; Scheufele, 2013). In other words, the public’s agenda is formed by the media agenda through “creating a shared, national pseudo-environment” by the news organizations to deliver the important news together, influencing the perceived importance of the public toward certain issues (Meraz, 2009, p. 683).

The exploration of the agenda setting theory at its initial stage mainly focuses on “attitude object” which involves the attitude or opinion held by an individual toward an issue and designating “a set of objects” to define agendas (McCombs, 2005, p. 546). This initial stage is viewed as traditional agenda setting effects research. As the theory was further advanced, scholars introduced three additional dimensions to agenda-setting research: attribute agenda setting which is also called second-level agenda setting, need for orientation which is known as individual-level agenda setting, and intermedia agenda setting which mainly focuses on explaining how the media agenda is shaped (Meraz, 2009; Conway et al., 2015; Haim et al., 2018).

Intermedia agenda setting originates from the exploration of the question: “if the press sets the public agenda, who sets the media agenda?” (McCombs, 2005, p. 548). McCombs (2005) says that “norms and traditions of journalism, the daily interactions among news organizations themselves, and the continuous interactions of the news organizations with numerous sources and their agenda” (p. 548) determine the media agenda. With the influences of these factors, journalists’ decisions and practices become routinized (McCombs, 2005). The journalists tend to routinely monitor news stories from

other media outlets to confirm their selections of news are valid and consistent with other media outlets’ agendas (Roderick, 2014). For example, they tend to observe other media outlets, especially those elite news organizations, such as the *New York Times*, to “validate their sense of news” (McCombs, 2005, p. 549), to validate the legitimacy of their news choices. Besides, except for journalists, editors’ regular engagement in “crosschecking of each other’s news stories” (Roderick, 2014, p. 337) is conducive to better verifying and validating their story selections. As a result, the highly homogeneous news agenda can be found among all kinds of news media.

In previous research, researchers explore intermedia agenda setting effect between elite-to less elite mass media outlets. They find that, in the traditional media environment, there is a strong intermedia effect between legacy and non-legacy mass media outlets (Harder and et al., 2017; Lim, 2006; Meraz, 2009; Reese and Danielian, 1989). The results show that non-legacy newspapers and legacy newspapers share highly homogeneous news agendas. Also, other scholars apply this concept to the convergence media environment. They find that a strong intermedia effect exists among multiple news media platforms including website, television, and newspaper (Meraz, 2009; Yu and Aikat, 2005).

Although strong agenda correlations are found between legacy and non-legacy media outlets, researchers have found a decrease in agenda correlations among legacy media. The scholars propose two reasons to explain this phenomenon.

The first reason is due to the emergence of market journalism. Market journalism refers to a market model of journalism or market-driven approach under which news organizations cover the stories that meet the interest of their audiences and advertisers rather than focusing on seeking “what is important and salient” for the audiences to know, which is also called “the trustee model” (Roderick, 2014). If some legacy media outlets adopt this market-driven approach in covering news while others still follow the trustee model to select their news topics, then, news divergence appears. The news topics might no longer be the same within the legacy media outlets.

The second reason is due to the new concept—news philosophy. News philosophy “dictates the nature of the news product that the media organization offers and how its coverage will help differentiate it from its peers” (Roderick, 2014, p. 338). The news philosophy helps the legacy media outlets brand and distinguish themselves in the competitive media environment, leading to the decrease of agenda correlation among the legacy media outlets. Political fragmentation is consistent with the concept of news philosophy. The legacy media outlets with different political ideology tend to differentiate their news coverage from their competitors. From the news production’s perspective, the differences in political

ideology of different news organizations determine the nature of the news product, prompting the differentiation of the news coverage and decreasing the agenda correlation. From the news consumers' perspective, the selective exposure of the audiences exerts great influence on how news organizations select news reports which can cater to the needs of their audiences. During this process, news organizations with different ideologies manage to identify their niche in the market and fulfill the demands of their audience, leading to the decrease of agenda correlation.

Based on the literature review and the contradictory perspectives about news conformity, the following research questions are proposed:

RQ1: To what degree does the agenda correlation exist among legacy media outlets in pushing news notifications on mobile media?

RQ2: To what degree does the agenda correlation exist among legacy media outlets and non-legacy media outlet in pushing news notifications on mobile media?

Guided by news philosophy and political fragmentation, the news products tend to represent the ideology of the news organizations. On the other hand, as institutions, news organizations, regardless of whether they are legacy or non-legacy media outlets, need to follow similar patterns with other news organizations in order maintain their legitimacy in the society. Hence, the institutional isomorphism is an unavoidable phenomenon which can be observed among legacy media outlets, and between legacy media outlets and non-legacy media outlets. The homogeneity of the news agenda not only demonstrates the routinized patterns of thoughts and work of journalism professionals but also displays institutional isomorphism.

### **Institutional Isomorphism**

Institutional isomorphism refers to the idea that "organizations that share the same environment tend to take on similar forms as efficiency-seeking organizations seek the optimal 'fit' with their environment" (Boxenbaum and Jonsson, 2008, p. 78). In other words, the institutions not only adapt to the "technological pressure" but also, more importantly, to "what they believe society expects from them" (Boxenbaum and Jonsson, 2008, p. 78). As a result, the institutions are inclined to seek the "social mundane" and "legitimate" to conform to the expectations from the society (Boxenbaum and Jonsson, 2008, p. 78).

There are three main perspectives as to why organizations become similar (Boxenbaum and Jonsson, 2017). The first perspective is from Max Weber's "iron cage of rationality." This perspective places emphasis on how the pressure of competitive forces in the society prompts the organizations to adopt similar structures and take similar actions. The second perspective is from rational adaptation theorists, and they argue that the

adaption to similar forms results from the purpose of efficiency-seeking. The organizations are inclined to find the optimal way to fit themselves in the same environment. The third perspective is from population ecology theorists' idea of competitive selection, suggesting that the survival of organizations with similar structures is dependent upon the outcome of the competition.

DiMaggio and Powell (1983) proposed three influential pressures that cause the similar structural adaptation of the organizations. The first one is coercive pressure (Boxenbaum and Jonsson, 2008, 2017; Edelman, 1992; Guillén, 2001; Sutton et al., 1994). Such pressure comes from "the power relationship and politics," like state, to force organizations to adopt certain structures (Boxenbaum and Jonsson, 2008, p. 80). The second one is mimetic pressure (Boxenbaum and Jonsson, 2008; Haveman, 1993; Palmer et al., 1993). Such pressure results from the uncertainty of the organizations, meaning that the organizations attempt to adopt the similar structures of the successful organizations to avoid risk and perhaps profit loss, which is consistent with Max Weber's perspective. The third one is normative pressure (Boxenbaum and Jonsson, 2008; Suchman, 1995). Such pressure refers to the organizations take the proper actions that are in line with the moral duties. Most of the time, normative pressure relates to professions because the education and training acquired by the professionals are similar, leading them to have similar values of "what is proper" (Boxenbaum and Jonsson, 2008, p. 80).

Likewise, news organizations are undergoing these three pressures. They need to deal with the coercive pressure through abiding by the rules set by the states and governments. In other words, news production needs to deliver the consistent ideology of power (Jensen, 1987). Cook (2008) even argues although the "freedom of the press" is protected by the Constitution, news organizations are controlled by private corporations, and their functions are influenced by government decisions. In other words, news production does not have "absolute" freedom. News production is consistent with certain political ideology. Moreover, news organizations are in a highly competitive environment, to avoid financial losses and risk, they tend to adopt the similar structures of the successful or influential news organizations, which is helpful for them to handle the mimetic pressure.

Applying institutional isomorphism to the sustainability of the legacy media outlets, the legacy media outlets might tend to have similar patterns in pushing news alerts. The reasons fall into two parts. First, they need to compete with each other. Competition serves as the driving force for the legacy media outlets to "copycat" each other's news notification patterns because the legacy media outlets are inclined to adopt the similar patterns to ensure that they are doing the "right" thing and would not suffer financial losses. Second, the legacy media outlets tend to seek to maintain their legitimacy for

their audiences. Adopting similar patterns of pushing news notifications manages to legitimize their authority for their audiences because other legacy news media outlets are pursuing the same method to deliver their news on mobile media.

Yet, as reviewed above, the news philosophy requires the media news outlets to distinguish themselves to some extent, which might be contradictory to the propositions of institutional isomorphism. From the perspective of institutional isomorphism, the media outlets, especially the legacy media outlets, tend to mimic the news operation of each other because of market competition and to maintain legitimacy and avoid charges of negligence. Whereas, from the perspective of news philosophy, only through having different news notification pushing patterns, can the media outlet distinguish itself in the market, especially in today's mobile era.

In the current study, news notification pushing patterns are examined on three attributes: average news pushing frequency, news immediacy, and news locale. Because of these contradictory perspectives, the following research questions are proposed:

RQ3: How similar are legacy media outlets' patterns of pushing news notifications on mobile media?

Applying the perspective of institutional isomorphism to news notifications pushing patterns to the non-legacy news media outlets, these news media outlets are inclined to mimic the patterns of the legacy news media outlets. The legacy media outlets are considered to be the successful outlets in the market. They serve as the "role models" for the non-legacy media outlets, or "flagships." Therefore, the non-legacy media outlets tend to follow the similar patterns of the successful role models to minimize their financial loss. During this process, the non-legacy media outlets might have similar or identical pushing patterns as legacy media outlets on mobile media. Thus, based on the previous literature review, the following research questions are proposed:

RQ4: How similar are non-legacy and legacy media outlets' patterns of pushing news notifications?

## METHODS

To systematically explore the research questions, a content analysis is employed.

### Selection of the news outlets

The current study mainly focuses on mobile media. Therefore, the mobile phone is the platform for the current study to investigate the research questions. The same news notifications are sent out by the mobile media platform regardless of the operating systems for the mobile devices. In the current study, the coders use the iPhones as the smartphone to examine the news notifications of the

news media outlets.

A total of 12 news apps were downloaded from App Store. These 12 news apps were ranked as the popular news apps on iPhone on Jan 23, 2015. The users' average rating for these 12 apps is above four stars. The rationale for selecting the popular news apps on iPhone is that they are the most highly-rated and downloaded news apps by users. In other words, the news notifications pushed by them can exert greater influence on the audiences than other news apps. Among these 12 apps, eight of them are from legacy media outlets while four are from non-legacy media outlets.

The eight legacy media outlets include NYT Now, CNN, AP mobile, Fox News, Guardian, ABC News, CBS News, and LA Times. In the current study, the type of legacy media outlet is based on the continuum pertaining to political ideology perceived by the audiences provided by Pew Research (Blake, 2014). Therefore, among the eight legacy media outlets, NYT Now, AP mobile, ABC News, CBS News and LA Times are considered as neutral legacy media outlets. CNN and Guardian are considered as liberal legacy media outlets. Fox News is considered as conservative media outlets.

The four non-legacy media outlets include Huffington Post, News 360, Circa and Daily Beast. The news notifications are turned on, meaning that the coders can obtain the news notifications from the media outlets once they send out their news alerts.

### Sample frame and the unit of analysis

Two coders are trained to code all news notifications, and a total of 15% of the sample is calculated for the intercoder reliability based on Cohen's Kappa values (reported after each variable below). The coders screenshot all news notifications sent to her iPhone from Jan. 23 to Feb. 23, 2015. A total of 249 news notifications are captured. Each news notification is one unit of analysis for the current study.

### Measured variables

#### *Legacy media name*

If the legacy media outlet is a conservative legacy media outlet, number "1" is assigned. If the legacy media outlet is a liberal legacy media outlet, number "2" is assigned. If the legacy media outlet is a neutral legacy media outlet, number "3" is assigned. The intercoder reliability is 1.0.

#### *Non-legacy media name*

Take down the name of non-legacy media outlets. Number "4" is assigned to refer to the non-legacy media outlets. The intercoder reliability is 1.0.

#### *Date*

Take down the dates of the news notifications. The intercoder reliability is 1.0.

#### *Topic*

A pre-test of 50 news notifications was conducted to identify the major topics. A total of five main topics were generated. If the news notification is about politics, number "1" is assigned. If the news notification is about society, the number "2" is assigned. If the news notification is about entertainment, number "3" is assigned. If the

news notification is about sports, then, number “4” is assigned. If the news notification is about “weather,” number “5” is assigned. If the news notification is about “economy,” number “6” is assigned. If the news notification is about topics other than these five topics, then, number “7” is assigned. The intercoder reliability is 0.93.

### **Locale**

If the news is national news, number “1” is assigned. If the news is international news, number “2” is assigned. If the news is regional news, number “3” is assigned. The intercoder reliability is 1.0.

### **News event**

News event refers to the story described in the news reports. The coders take down the news events of each news notification. The intercoder reliability is 1.0.

### **News immediacy**

The coders record whether the news is breaking or not based on the news notification pushed by the media outlets. If the news notification includes “breaking” in their news notifications, number “1” is assigned, indicating that the news is a piece of breaking news. If the news notification does not include “breaking,” number “2” is assigned, indicating that the news is not a piece of breaking news. The intercoder reliability is 1.0.

### **Conformity of the news**

As reviewed above, three types of legacy media outlets are included in the current study: conservative legacy media outlets, liberal legacy media outlets, and neutral media legacy outlets. The current study compares each news notification from each legacy media outlet. Therefore, a total of agenda correlations are generated: the agenda correlation between conservative and liberal legacy media outlets, agenda correlation between conservative and neutral legacy media outlets, and the agenda correlation between liberal and neutral media outlets.

If the news notification from conservative legacy media outlet shares the same news event and news topic with the news notification from a liberal legacy media outlet, number “1” is assigned, or otherwise, number “0” is assigned. If the news notification from conservative legacy media outlet shares the same news event and news topic with the news notification from a neutral legacy media outlet, number “1” is assigned, or otherwise, number “0” is assigned. If the news notification from liberal legacy media outlet shares the same news event and news topic from neutral legacy media outlet, number “1” is assigned, or otherwise, number “0” is assigned. The intercoder reliability is 1.0.

As reviewed above, the current study also includes four non-legacy media outlets. If the news notification from the non-legacy media outlet shares the same news event and news topic with news notification from conservative legacy media outlet, number “1” is assigned, or otherwise, number “0” is assigned. If the news notification from the non-legacy media outlet shares the same news event and news topic with news notification from liberal legacy media outlet, number “1” is assigned, or otherwise, number “0” is assigned. If the news notification from the non-legacy media outlet shares the same news event and news topic with news notification from a neutral legacy media outlet, number “1” is assigned, or otherwise, number “0” is assigned. The intercoder reliability is 1.0.

### **News notification frequency**

The coders record the number of news notifications pushed to her smartphone and took down the number of news notification for each legacy news media outlets and non-legacy news media outlets. The intercoder reliability is 1.0.

### **Average news notification frequency for each media outlet type**

As reviewed above, the current study includes three types: conservative legacy media outlets, liberal legacy media outlets, and neutral legacy media outlets. The coders calculate the distribution of news notifications by media type based on the formula that using the total number of news notifications divided by the total number of media outlets of a certain type. The intercoder reliability is 1.0.

## **RESULTS**

The current study analyzed 249 news notifications from Jan. 23 to Feb. 23 on the smartphone. Based on the descriptive statistics, 93.2% ( $N = 232$ ) of the news notifications are pushed from legacy media outlets while 6.8% ( $N = 17$ ) of the news notifications are pushed from non-legacy media outlets. Among the legacy media outlets, 6.9% ( $N = 16$ ) of the news notifications are pushed from conservative legacy media outlets, 28% ( $N = 65$ ) of the news notifications are pushed from liberal legacy media outlets, and 65.1% ( $N = 151$ ) of the news notifications are pushed from neutral legacy media outlets.

In terms of the news locale, a total of 76.7% ( $N = 191$ ) of the news is national news, 21.3% of the news is international news ( $N = 53$ ), and 2.0% of the news is regional news ( $N = 5$ ). In terms of the news topic, a total of 40.6% ( $N = 101$ ) of the news is about politics, 42.6% ( $N = 106$ ) of the news is about society, 6.8% ( $N = 17$ ) of the news is about sports, 4.8% ( $N = 12$ ) of the news is about economy, 4.0% ( $N = 10$ ) of the news is about entertainment, .8% ( $N = 2$ ) of the news is about weather and .4% ( $N = 1$ ) of the news belongs to others. Among all news notifications, 38.6% ( $N = 96$ ) of the news is breaking news while 61.4% ( $N = 153$ ) of the news is non-breaking news (Table 1).

RQ1 asks whether an agenda correlation exists among legacy media outlets on the mobile media platform. A series of Chi-Square tests are conducted (Table 2). Based on the results from testing whether conservative legacy media outlets and liberal legacy media outlets push the same news notifications, a significant difference is found ( $\chi^2(2) = 44.87, p < .001$ ). The news notifications from conservative legacy media outlets are more likely to push different news topics and events (56.3%) than pushing the same news topics and events as liberal legacy media outlets (43.8%). Similarly, the news notifications from liberal legacy media outlets are more likely to push different news topics and events (84.6%) than pushing the same news topics and events as

**Table 1.** Descriptive statistics.

Parameter		N	Percent
<b>News locale</b>	National news	191	76.7
	International news	53	21.3
	Regional news	5	2.0
<b>News topic</b>	Politics	101	40.6
	Society	106	42.6
	Sports	17	6.8
	Economy	12	4.8
	Entertainment	10	4.0
	Weather	2	.8
	Others	1	.4
	<b>Breaking news</b>	Breaking news	96
Non-breaking news		153	61.4

**Table 2.** Chi-Square Results for News Conformity.

News conformity	Media type	N	Prop	$\chi^2$	df	sig																																																			
<b>Conservative-Liberal</b>	Conservative Legacy	Different	9	56.3	44.87	2	0.000																																																		
		Same	7	43.8				<b>Conservative-Liberal</b>	Liberal Legacy	Different	55	84.6	44.87	2	0.000	Same	10	15.4	<b>Conservative-Neutral</b>	Conservative Legacy	Different	9	56.3	19.64	2	0.000	Same	7	43.8	<b>Conservative-Neutral</b>	Neutral Legacy	Different	131	86.8	19.64	2	0.000	Same	20	18.9	<b>Liberal-Neutral</b>	Liberal Legacy	Different	32	49.2	13.90	2	0.001	Same	33	50.8	<b>Liberal-Neutral</b>	Neutral Legacy	Different	92	60.9	13.90
<b>Conservative-Liberal</b>	Liberal Legacy	Different	55	84.6	44.87	2	0.000																																																		
		Same	10	15.4				<b>Conservative-Neutral</b>	Conservative Legacy	Different	9	56.3	19.64	2	0.000	Same	7	43.8	<b>Conservative-Neutral</b>	Neutral Legacy	Different	131	86.8	19.64	2	0.000	Same	20	18.9	<b>Liberal-Neutral</b>	Liberal Legacy	Different	32	49.2	13.90	2	0.001	Same	33	50.8	<b>Liberal-Neutral</b>	Neutral Legacy	Different	92	60.9	13.90	2	0.001	Same	59	39.1						
<b>Conservative-Neutral</b>	Conservative Legacy	Different	9	56.3	19.64	2	0.000																																																		
		Same	7	43.8				<b>Conservative-Neutral</b>	Neutral Legacy	Different	131	86.8	19.64	2	0.000	Same	20	18.9	<b>Liberal-Neutral</b>	Liberal Legacy	Different	32	49.2	13.90	2	0.001	Same	33	50.8	<b>Liberal-Neutral</b>	Neutral Legacy	Different	92	60.9	13.90	2	0.001	Same	59	39.1																	
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		Same	33	50.8				<b>Liberal-Neutral</b>	Neutral Legacy	Different	92	60.9	13.90	2	0.001	Same	59	39.1																																							
<b>Liberal-Neutral</b>	Neutral Legacy	Different	92	60.9	13.90	2	0.001																																																		
		Same	59	39.1																																																					

conservative media outlets (15.4%). In other words, no agenda correlation exists between conservative and liberal legacy media outlets on the mobile media platform.

Based on the results testing whether conservative legacy media outlets and neutral legacy media outlets push the same news notifications, a significant difference is found ( $\chi^2(2) = 19.64, p < .001$ ). The news notifications from conservative legacy media outlets are more likely to push different news topics and events (53.6%) than pushing the same news topics and events as neutral legacy media outlets (43.8%). Likewise, the news notifications from neutral legacy media outlets are more likely to push different news topics and events (86.8%)

than pushing the same news topics and events as conservative media outlets (13.2%). In other words, no intermedia agenda setting effects exist between conservative and neutral legacy media outlets on the mobile media platform.

Based on the results testing whether liberal legacy media outlets and neutral legacy media outlets push the same news notifications, a significant difference is found ( $\chi^2(2) = 13.90, p < .05$ ). The news notifications from neutral media outlets are more likely to push different news topics and events (60.9%) than pushing the same news topics events as liberal media outlets (39.1%). Yet, the results show that news notifications from liberal

**Table 3.** Non-parametric binomial test results for news stories conformity.

<b>News conformity</b>	<b>Proportion</b>	<b>Sig</b>
<b>Non-Legacy-conservative legacy</b>		
Different	0.94	0.000
Same	0.06	
<b>Non-Legacy-liberal legacy</b>		
Different	0.88	0.002
Same	.12	
<b>Non-Legacy-neutral legacy</b>		
Different	0.24	0.049
Same	0.76	

legacy media outlets are more likely to push same news topics and events (50.8%) as neutral legacy media outlets than pushing different news topics and events (49.2%). In other words, neutral media outlets have no tendency to follow the same agenda of the liberal media outlets while the liberal legacy media outlets have slight tendency to follow the same agenda of the neutral legacy media outlets in pushing news notifications on the mobile media outlets.

RQ2 asks whether non-legacy media outlets are inclined to push the same news topics and news events as the legacy media outlet on the mobile media platform. A series of non-parametric binomial tests are conducted (Table 3). Based on the results, non-legacy media outlets are significantly more likely to push the same topics and news events as a neutral legacy media outlet ( $p < .05$ ). The results show that 76% of the news topics and events pushed from non-legacy media outlets are the same as the neutral legacy media outlets. Yet, non-legacy media outlets are significantly more likely to push different topics and news events as conservative and liberal media outlets ( $p < .05$ ). The results indicate that 94% of the news topics and events pushed from non-legacy media outlets are different from the conservative media outlets and 88% of the news topics and events pushed from the non-legacy media outlets are different from the liberal media outlets. In sum, the agenda correlation exists only between non-legacy media outlets and neutral legacy media outlets on the mobile media platform.

RQ3 asks whether legacy media outlets have similar news pushing patterns on the mobile media platform. The total number of news notifications for a conservative media outlet is 16 in one month, and there is only one conservative media outlet in the study. Thus, the frequency of a conservative media outlet in news pushing is 0.53 per day ( $16 \div 30$ ). The total number of news notifications for liberal media outlets is 65 in one month, and there are two liberal media outlets in the study. Therefore, the frequency of the liberal media outlet in news pushing is 1.08 per day on average ( $16 \div 2 \div 30$ ). The total number of news notifications for the neutral media outlet is 151 in one month, and there are five

neutral media outlets in the study. Therefore, the frequency of a neutral media outlet in news pushing is 1.01 per day ( $151 \div 5 \div 30$ ). These three types of legacy media outlets are inclined to push one news notification per day. In other words, the legacy media outlets basically share similar news pushing patterns in terms of frequency.

For conservative media outlets, the most frequently pushed topic is politics (43.8%) and the second most frequent pushed topic is society (37.8%). Also, for liberal legacy media outlets, the most frequent pushed topic is politics (47.7%) and the second most frequently pushed topic is politics (38.5%). For neutral legacy media outlets, the most frequently pushed topic is society (44.4%) and the second most frequently pushed topic is politics (36.4%). In other words, politics and society are the two major topics pushed by all three types of legacy media outlets. Therefore, the legacy media outlets share similar news pushing topics.

For conservative legacy media outlets, the most frequently pushed news locale is national news (68.8%). Likewise, for liberal legacy media outlets, the most frequently pushed locale is national news (67.7%). Also, for neutral legacy media outlets, the most frequently pushed news locale is national news (80.8%). Therefore, the legacy media outlets share the same news locale in the news pushing on the mobile media platform.

For conservative legacy media outlet, the most frequently pushed news is breaking news (68.8%). For liberal legacy media outlets, the most frequently pushed news is non-breaking news (76.9%) and also for neutral legacy media outlets, the most frequently pushed news is non-breaking news (55.0%). In other words, liberal and neutral legacy media outlets share the same pattern in pushing non-breaking news while conservative media outlets are more likely to push breaking news. RQ4 examines whether non-legacy media outlets and legacy media outlets follow the similar pattern of news pushing on the mobile media platform. The total number of news notifications for non-legacy media outlets is 17 in one month, and there are four non-legacy media outlets in the current study. Thus, the frequency of non-legacy media

outlet in news pushing is 0.14 per day on average ( $17 \div 4 \div 30$ ). In other words, the non-legacy media outlets fail to push even one notification per day. As aforementioned, the frequency of legacy media outlet in news pushing ranges from 0.51 to 1.08. Therefore, the non-legacy media outlets do not share the similar news pushing patterns as legacy media.

For non-legacy media outlets, the most frequently pushed topics are politics (47.1%) and society (47.1%), which are consistent with the most frequently pushed topics from legacy media outlets. Therefore, the non-legacy media outlets share similar news pushing topics with legacy media outlets.

For non-legacy media outlets, the most frequently pushed news locale is national news (82.4%) which is consistent with the most frequently pushed news locale from legacy media outlets. Thus, the non-legacy media outlets share similar news locale with legacy media outlets.

For non-legacy media outlets, the most frequently pushed news is non-breaking news (88.2%) which is consistent with the most frequently pushed news from liberal and neutral legacy media outlets. Hence, non-legacy media outlets are likely to push non-breaking news notifications as liberal and neutral legacy media outlets.

## DISCUSSION

By conducting a content analysis on news notifications on the mobile media platform, the current study investigates 1) the agenda correlation among legacy media outlets and between legacy media outlets and non-legacy media outlets, and 2) the news notifications pushing patterns among legacy media outlets and between legacy media outlet and non-legacy media outlets. The findings show that no agenda correlation is found among legacy media outlets except for liberal and neutral legacy media outlets. Liberal legacy media outlets have a slight tendency to follow the same agenda of the neutral legacy media outlets. Also, agenda correlation exists between non-legacy media outlets and legacy media outlets. Furthermore, legacy media outlets have similar news notification patterns regarding news pushing frequency, news topic, news locale and news immediacy. On the other hand, non-legacy media outlets and legacy media outlets have different news notification patterns regarding news pushing frequency, but similar patterns in news topic, news locale and news immediacy. Both theoretical and practical implications are discussed below.

### Theoretical implications

First, one of the noteworthy findings in the current study is that no agenda correlation is found among legacy media outlets in pushing news notifications on the mobile media platform. This finding is consistent with the perspective of news philosophy which indicates and

emphasizes the distinct news features of the news organizations to differentiate themselves from their peers (Roderick, 2014). In other words, the news philosophy approach encourages “differentiation rather than imitation” (Chalaby, 2000; Roderick, 2014, p. 338). Roderick (2014) cites an example from Stelter (2012) to illustrate this approach: “the U.S. evening newscasts increasingly try to distinguish themselves by purposely picking some stories that differ from their rivals, as well as through stylistic changes” (p. 338). This phenomenon can be observed from the news topics and news events pushed by legacy media outlets on the mobile media platform in the current study. For legacy media outlets, the urge of branding and being distinctive becomes more salient than avoiding financial loss by cross-checking and copying their peers’ news topics and events.

Moreover, an agenda correlation exists between non-legacy media outlets and neutral legacy media outlets in mobile media. This finding is in line with previous studies exploring agenda correlation between non-elite media outlets and elite media outlets. The finding is also consistent with the perspective of institutional isomorphism: The non-legacy media outlets are inclined to perceive the legacy media outlets as their highly legitimated role models, which are succeeding in the market. Therefore, covering the same topics and events as the legacy media outlets becomes a tendency for these non-legacy media outlets. Also, this finding is consistent with the resource dependence theory which states that large actors who control the resources tend to exert influences on small actors (Nienhüser, 2008). On the mobile media platform, larger actors are the legacy media outlets who control the market resources while small actors are the non-legacy media outlets who tend to depend on legacy media outlets to obtain their resources in order to succeed in the market.

Finally, findings show that legacy media outlets are likely to have the same patterns of pushing news notifications, including pushing at least one news notification per day. Also, the pushed news shared similar attributes for locale, immediacy, and topic. This finding is consistent with the perspective of institutional isomorphism as reviewed above. The similar news pushing patterns are conducive for legacy media outlets to maintain high efficiency in the competition of mobile media environment, and these patterns and practices may also be increasingly legitimated across the profession and industry, and therefore becoming routinized and taken for granted.

Yet, another noteworthy finding is regarding news pushing frequency. Compared with legacy media outlets, non-legacy media outlets have different news notification patterns, which is inconsistent with the perspective of institutional isomorphism. The non-legacy media outlets fail to push one news notification per day. In other words, the non-legacy media outlets seldom push news notifications to users’ smartphones. One potential reason might be that the mobile strategy for non-legacy media

outlets is different from legacy media outlets. The non-legacy media outlets in the current study are mainly news-gathering platforms, such as News 360 and Circa, which do not generate original news content but gather news from legacy media outlets or social media. The users of such non-legacy media outlets might have different motives for news consumption than users of the legacy media outlets. According to uses and gratifications theory (Althaus and Tewksbury, 2000; Ha and Fang, 2012; Heikkinen and Reese, 1986), users' motivations and evaluations of news consumption determine the news content and updates. The users of non-legacy media outlets, especially news-gathering outlets, might tend to obtain news from various sources and do not expect to receive news notifications from them since they are not legacy media outlets.

Users might rather receive news notifications from legacy media outlets because they are the "legitimate" news resources to disseminate news. Therefore, the non-legacy media outlets tend to have different news notifications pushing patterns than the legacy media outlets, indicating that both legacy media outlets and non-legacy media outlets share a similar understanding of legitimacy and their niche markets.

### Practical implications

Based on the findings, two practical implications are generated.

First, for both legacy and non-legacy new outlets, branding and being distinctive is the trend in surviving and succeeding in mobile media. The regulation of the news organizations and the routinized journalists' practice might hinder the process of differentiating themselves from their peers. Yet, to break the clutter of numerous mobile news notifications, establishing your own brand and picking your own stories might be an optimal option. For new entrants, it does not necessarily mean one must reinvent mobile news strategies. They can follow the proven practices and forms. The critical issue for new entrants is to pinpoint the right niche and develop unique brand features.

Moreover, for non-legacy news outlets, they might need to select an optimal way to cater to their audiences' demand to develop their own news pushing patterns. Only in this way can the non-legacy new outlets have their own features and survive in today's mobile era.

### Limitations and future directions

There are several limitations in the current study.

First, the current study focuses on three types of legacy media outlets. As for the conservative legacy media outlets, only Fox news is examined. In future studies, several other conservative legacy media outlets could be

included.

Second, for the selection of non-legacy media outlets, mainly news gathering media outlets are selected. In future studies, several other types of non-legacy media outlets could be included.

Also, the current study is rather exploratory; therefore, the current study merely tracks the news notifications in a one-month frame, resulting in the lacking of large sample size. In the future study, longer time frame and more news notifications should be included.

Furthermore, in order to have an in-depth understanding of agenda correlation in mobile media, surveys or some qualitative methods, such as interviews, might be included in future studies.

Finally, the current study mainly examines a wide range of topic categories. Future studies might focus on one specific topic to better investigate news homogeneity.

### Conclusion

After conducting a systematic content analysis on the pushed news notifications on a smartphone, two main results are found. On the one hand, an agenda correlation is found between non-legacy media outlets and legacy media outlets. On the other hand, no agenda correlation exists among legacy media outlets, which is an opposite and unexpected finding. Guided by news philosophy, the legacy media outlets tend to brand themselves by selecting different news events. Yet, the similar news notification pushing patterns might generate the illusion that they are pushing the similar news stories.

Referring back to the question proposed by the researcher at the beginning of the article, "Do the mobile media strengthen the unsettling paradox in mass communication (which is put forward by Johnson (1996), the more information we have, the less we know)?" Based on the results of the current study, the answer is no. The competition pressure of the mobile media and the guidance of news philosophy prompt the legacy media outlets to differentiate themselves from their peers. The stories they pick and push are different from their competitive peers. However, if the user only depends on news gathering applications to obtain their news, then, they might only expose to their favorite sources, which can limit their choices of news consumption.

### CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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